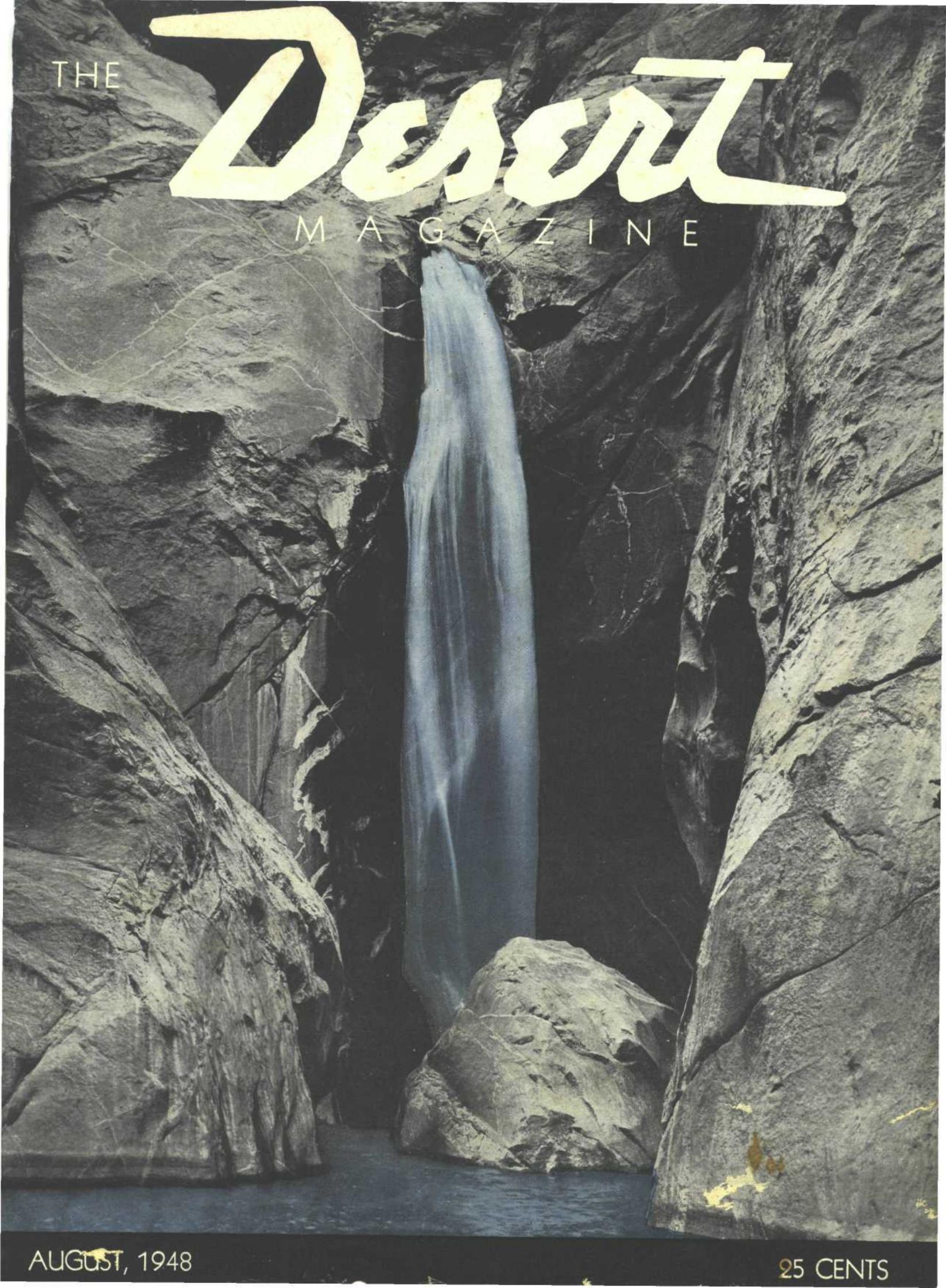


THE

Desert

MAGAZINE



AUGUST, 1948

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Desert Calendar

July 24-Aug. 15—Exhibit Southwestern Indian paintings from collection of Mr. C. H. Dietrich, Museum of Northern Arizona, Flagstaff, Arizona.

Aug. 1—Walker Lake annual outboard motor regatta, Hawthorne, Nevada.

Aug. 1—Summer visitors' tour to Moencopi, Hopi village, sponsored by Flagstaff Cavaliers, Flagstaff, Arizona.

Aug. 1-7—National archery tournament, Reno, Nevada.

Aug. 2—Feast day, Old Pecos dance, Jemez pueblo, New Mexico.

Aug. 3-4—Ogden junior fat stock show, Ogden, Utah.

Aug. 4—Feast day of Santo Domingo, Fiesta and summer corn dance, Santo Domingo pueblo, New Mexico.

Aug. 4-7—Pioneer days celebration, Raton, New Mexico.

Aug. 6-8—Annual Cowboys' Reunion, Las Vegas, New Mexico.

Aug. 8—Summer visitors' tour, Walnut Canyon, sponsored by Flagstaff Cavaliers, Flagstaff, Arizona.

Aug. 8—Annual Smoki ceremonial and snake dance, Flagstaff, Arizona.

Aug. 10—Feast day of San Lorenzo, fiesta and summer corn dance, San Lorenzo (Picuris) pueblo, New Mexico.

Aug. 12—Feast day of Santa Clara, fiesta and corn dance, Santa Clara pueblo, New Mexico.

Aug. 12-13—Wasatch county fair and Blackhawk encampment, Heber City, Utah.

Aug. 15—Summer visitors' tour to a petrified forest and to dinosaur tracks north of Flagstaff, sponsored by Flagstaff Cavaliers, Flagstaff, Arizona.

Aug. 15—Assumption day, fiesta and corn dance, Zia pueblo, New Mexico.

Aug. 19-21—Summit county fair, Coalville, Utah.

Aug. 19-21—Box Elder county fair, Tremonton, Utah.

Aug. 19-21—Davis county fair, Kaysville, Utah.

Aug. 19-22—Twenty-seventh annual Inter-Tribal Indian Ceremonial, dances and rodeo, Gallup, New Mexico.

Aug. 20-21—Millard county rodeo and fair, Deseret, Utah.

Aug. 21-Sept. 12—Third Annual Arizona Photographers statewide photographic exhibition, with emphasis on the Southwestern scene. Museum of Northern Arizona, Flagstaff, Arizona.

Aug. 22—Annual horse show, 11th Cavalry at Camp Luna, Las Vegas, New Mexico.

Aug. 22—Summer visitors' tour to typical cattle ranch, sponsored by Flagstaff Cavaliers, Flagstaff, Arizona.

Aug. 25-28—Salt Lake county fair and horse show, Murray, Utah.

Aug. 26-28—Cache county fair and rodeo, Logan, Utah.

Aug. 28—Feast day of San Augustin, fiesta and dance, Isleta pueblo, New Mexico.

Aug. 28-29—Annual rodeo sponsored by 20-30 club, Flagstaff, Arizona.



Volume 11

AUGUST, 1948

Number 10

COVER

TAHQUITZ CANYON FALLS, California. Photograph by Nicholas H. Kozloff, San Bernardino, California.

CALENDAR

August events on the desert 3

PATHBREAKER

Padre of the San Juan
By MARIAN HUXOLL TALMADGE and
IRIS PAVEY GILMORE 5

INSECT

He's not as Pious as he Looks
By RICHARD L. CASSELL 10

CEREMONIAL

Warning Rattles for Snake Dance Visitors
By RAY JACKSON MILLER 11

PHOTOGRAPHY

Announcement of Cover Contest Winners 13

MINERALS

Magnetic Bombs from Pisgah
By JERRY LAUDERMILK 14

TRUE OR FALSE

A test of your desert knowledge 17

POETRY

Little Ghost Town, by GRACE PARSONS
HARMON. Art by HARRY OLIVER 18

PERSONALITY

Artist of Copper Canyon
By HAROLD O. WEIGHT 19

ART OF LIVING

Desert Trails, by MARSHAL SOUTH 21

NATURE

Fur Animal of the Desert Country
By EDMUND C. JAEGER 22

NEW ADDRESS

Desert Has Moved 23

TRAVEL

Utah's Incredible Arch of Stone
By CATHERINE and DICK FREEMAN 24

HUMOR

Hard Rock Shorty of Death Valley 28

LETTERS

Comment from Desert Magazine readers 29

MINING

Current news of desert mines 32

NEWS

From here and there on the desert 33

CONTEST

Prize announcement for photographers 38

LAPIDARY

Amateur Gem Cutter, by LELANDE QUICK 40

HOBBY

Gems and Minerals 41

COMMENT

Just Between You and Me, by the Editor 46

BOOKS

Reviews of Southwest Literature 47

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Padre of the San Juan

Father Liebler—missionary to the Navajo. Photo by George Thompson, Espanola, New Mexico.

Caught in a symphony of desert sounds in minor key the wind sobs mournfully; wagon wheels grate over the trackless trails; a huge bell is shaken on its wooden frame by the shrill wind and adds its jangled resonance to the softer rustle of the tumbleweed speeding across the thirsty terrain. On this parched, dusty floor of the desert is a unique mission — St. Christopher's — which stands like a sentinel of God at the edge of the world. St. Christopher's is a Mission to the Navajo Indians.

By MARIAN HUXOLL TALMADGE and IRIS PAVEY GILMORE

*I*T'S the only road—you can't miss it," we were told at Bluff, Utah, when we inquired the way to St. Christopher's mission. Blending into the stark weatherworn bluffs and rimrocks on the floor of the narrow San Juan River valley, St. Christopher's stands at the northern rim of the Navajo reservation. It's 150 miles to the nearest railroad, 50 miles to the nearest paved highway, and a couple of miles to the ghost town of Bluff.

The mission was built by the Reverend H. Baxter Liebler, Episcopal clergyman, to help some of the neglected Navajo adjust to changing conditions thrust upon them by the white man.

Father Liebler at 56 is one of the most picturesque figures of today's Southwest. Tall, lean, tanned to a leather brown the padre presents a striking picture in either his flowing black cassock or his frock coat and flat-topped hat. His once coal black hair, now threaded with grey, is worn long, Navajo fashion. His blue eyes can be very gentle with a feverish Indian child; or they can flash fire when he tells of the many injustices suffered by his Navajo friends.

His black-robed figure is silhouetted against the red sandstone mission many times each day ringing the old locomotive bell, calling the Navajo to church, to school, for trips to town, or for emergencies. Daily he hustles about the grounds helping with the chores, hoeing the garden, instructing the Navajo in silverwork, teaching songs to the children, kneeling in prayer before the altar, or sitting at his



trustworthy portable pecking out a reply to the letter of a well-wisher.

His long fingers are deft at executing a sandpainting or planting alfalfa. He speaks with equal ease the language of the horse trader or the connoisseur, the dry farmer or the irrigation expert, the tourist or the Indian sheepherder.

"Almost from the first I was greeted by the name the Indians gave me," he told us. "As I rode across the reservation the Navajo were politely amused at my clerical garb and affectionately dubbed me *Ee'niishoodi*—The One Who Drags His Robe or The Drag Robe."

Five years ago this Episcopal priest gave up a fashionable parish to become a missionary among the Navajo. He was rector of Old Greenwich in Connecticut. He receives no pay for his work, only his food and clothes—"mostly old ones," he says. In this desert country where every drop of water counts, his robes are often dusty, his shoes worn, the cuffs of his frock coat frayed and his shirt is patched in many places.

It was in the summer of 1942 that this middle-aged New England clergyman took a vacation. He trekked across the Navajo reservation on a spotted Indian pony.

"I've got to stay," he wrote to friends in Connecticut. "These Navajo seem like Fortune's stepchildren to me. It's unbelievable that human beings are living such underprivileged lives in our great country. In this Bluff area the Navajo seem the most primitive. Not a school, not a church, not a hospital in 1500 square miles!"

As the padre stood on the banks of the San Juan and gazed toward the vast trackless reservation he had just covered, he said to himself: "God has brought me here to realize the need of these people." He gave his spiritual bootstraps a tug and his Yankee ingenuity whispered: "A mission here could perform miracles. I'll build one. It'll be a mission to serve the whole man—body, mind and spirit—because you can't preach the gospel to the hungry and tell them to be warmed and clothed."

Father Liebler soon realized he couldn't build the mission alone. He explains: "Father Clement, Brother Juniper and Brother Michael, members of an Episcopal Brotherhood, became interested and joined me. Helen Sturges, whose work with many minority groups recommended her, cast her lot with us to become the teacher.

"We chose this spot on the San Juan for the mission," the padre reminisces, "because an abundance of vegetation in a high crevasse in the canyon wall showed a seepage which could be developed into a spring. There had once been a trading post on the site with part of the walls still standing. We could make use of these old walls. The staff lived in tents our first season while we finished the building."

The next problem was one of education.

Uncle Sam had forgotten the pledge he gave in the treaty of 1868 to provide a school for every 30 Navajo children. Father Liebler saw the Navajo ill qualified to cope with a world which demanded ability to speak and understand English, to read and write the language, and to understand simple arithmetic. Their world was changing, more rapidly than they unaided could change to meet it.

So they established a day school. He chuckles when he remembers that even today he wears his hair long because of the school.

"Once for months I was not near a barber shop," he relates, "and my hair grew long. I was planning a trip home to Connecticut and just before leaving I thought I'd better have my hair cut so I wouldn't embarrass my eastern friends.

"One day three Navajo men came into the mission. When a Navajo wants to attract your attention he slaps you on the shoulder bone. I heard these three Indians talking very earnestly. Then one came up and thumped me on the shoulder and asked:

"Are you going to build a school?"

"I answered, 'Yes.'

"They went into a huddle with more conversation. Again he beat me on the shoulder: 'If you have school, will it be mission school?'

"Again I answered: 'Yes.'

"Back he went to the huddle. The third time he pounded my shoulder I knew there was something in the wind. 'Will it be like government school?' I asked him what he meant. 'Government school take little boys and girls. Chop off their hair,' he said pointing to his hair roll. 'We don't like!' I answered quickly, 'Doesn't *Ee'niishoodi* let his own hair grow long like you do?' That settled the question for them and for me—I've never had a haircut since."

Perhaps there is no schoolhouse anywhere like the one at St. Christopher's. The building, a former CCC shack, loaned by Uncle Sam, was the largest that could be trucked from Blanding, Utah, through narrow Cow canyon. The blackboards are painted wallboard. Discarded automobile maps are used for teaching geography. Ancient dog-eared National Geographics become reference books. A few well-thumbed copies of textbooks—no two alike—are carefully preserved. The Lord's Prayer in Navajo hangs conspicuously on the wall.

The writing of Navajo as well as English attracts the attention of visitors at once. Father Liebler early discovered what some educators fail to recognize: the problem of communication with a people who cannot read or write their own language. Children might learn English much faster if they were literate first in Navajo. But because many of the older Navajo were

impatient to learn English, Father Liebler innovated the study of Navajo and English simultaneously.

Whole families come to school. The tot of three sits next to a grandfather of 63. There aren't any baby-sitters on the reservation so the mothers bring their babies strapped to the cradleboards and line them up against the wall.

Helen Sturges—called *Baa'oolta'i*—The Counter, because she teaches them to count—is the teacher. She taught them their ABC's through the song: ABCD EFG HIJK LMNOP, QRS and TUV, double U, and XYZ. They love to sing rounds such as "Are you sleeping, Brother John?"

Ben Whitehorse, 45-year-old shepherd, stands next to eight-year-old Bobby Benally, adding a long column of figures at the blackboard. In the geography class, Jennie—18 years old and married—shyly, but proudly, points out New York City, the Great Lakes, the Rocky mountains, and finally her home on the desert Navajo reservation. They know about both oceans and that Father Liebler used to live near the Atlantic.

Father Liebler encourages them to keep their native art alive. On the walls are pictures made by the pupils varying from Navajo sandpainting designs to illustrations of the gospel stories. "The Indians draw the Biblical figures in Navajo costume with hair roll in back," he explains. "My favorite picture is the one of the Virgin Mary colored in the traditional Navajo red and yellow calico dress with black velvet blouse and necklace of silver squash blossoms."

The mission school furnishes a hot lunch at noon: soup is the main dish, and milk till the cow goes dry.

There are six hogans within easy walking distance of the mission now. They were built by families who want their children to attend school with greater regularity than is possible if they live across the river. The San Juan is dangerous many seasons of the year. Fording becomes impossible during flood stage or when it is too cold. The quicksands are treacherous and to miss the fording trail by so much as a few feet is to court disaster.

"Recently school had to be closed for the semi-annual clinic," said the Padre, "as we haven't enough staff to handle both. Bill Stash, almost five years old and a bit over one yard tall rode through the treacherous river and quicksands, alone to come to school. He was very unhappy when he found the school closed. He trotted under the horse's belly, pulled the horse over to a post, climbed from there to its back and rode sadly home. No wonder his family plans to build a hogan near the school for the winter."

Twice a year the staff rolls up its sleeves and pitches in at the medical and dental



Mary Rose Allen of the staff at St. Christopher's mission stops for a visit with Stash and his family as they are on their way to the trading post at Bluff. Photo by George Thompson, Espanola, New Mexico.

clinic which Father Liebler organized under the supervision of the U. S. Indian Service doctor. Ears are probed, aching teeth extracted or filled, hypos injected, anti-toxins given, festering sores cauterized by the dozen.

Trachoma cases if neglected cause blindness. Difficult as it is, the patients must receive three treatments daily—a full time nurse's job—only there isn't one! A touching sight are the little children holding their own eyes open to receive the painful treatment.

Mustache Begay was a stubborn objector to medical help. Big Stash, as he is called by Father Liebler, is one of the few capitalists of the reservation. He shows his wealth by a mouthful of gold teeth, a well-dressed wife and a large number of well-fed children. One hot summer day, to everyone's surprise, his wife and children drove down the trail in the finest wagon on the reservation. Father Liebler won-

dered why Big Stash's family was coming to the mission. Big Stash had always looked down his nose at Father Liebler's work.

The wagon drew near with wheels rumbling in and out of chuckholes to the accompaniment of the bark of a dog. Mrs. Stash brought a 15-month-old baby whose leg was swollen to five times its normal size because of a cactus thorn.

"I never worked harder," said the padre. "As the sweat poured off me the child screamed louder. With all my probing into that swollen leg I couldn't find the thorn and I didn't think I was going to. But Mrs. Stash's black glowering looks became a challenge to me. Suddenly the vicious thorn appeared. I cut it out carefully, sterilized and dressed the wound. They left without a word of thanks but relations with Big Stash improved after that."

Since that time Big Stash brings his

wagon to the medical and dental clinic where he uses it to haul sick Navajo in to the mission for treatment.

"Since many of the Navajo have little money sense," the padre explains, "we've tried to teach them the value of money."

Kindness and patience are his by-words. But behind extreme kindness and sympathy is a will of iron. Soon after they built the mission an old Indian asked Father Liebler to order a vise. The vise was a long time coming and when it finally arrived the Indian had spent his money. "I decided to let him have the vise anyway, as he needed it. Some time later he brought in a gun to be repaired. I had it fixed in Durango, Colorado, and brought it back with me. The next day he came in and asked: 'Did you bring my gun?' I answered, 'Yes,' but I made no move to give him the gun. He came in the next two days and each time he asked the same question. Each time I answered, 'Yes.' The fourth day he



Navajo mother with her baby pose for their first photograph, in Monument valley.
Photo by Jack Breed, Swampscott, Mass.

brought the money for the vise and received his gun."

One day Big Stash asked Father Liebler to have a gun fixed for him in Cortez, Colorado. The padre had it repaired. It cost \$18.25. He knew Big Stash would be very unhappy about the price. Big Stash took the gun, but did not offer to pay the bill at once. Some time went by. Finally Father Liebler approached him and asked him to pay for the gun. He said, "Pretty soon I get no money I get thin." Big Stash looked at the padre for several moments. Then he reached in his pocket and pulled out a roll of bills. As he peeled off the necessary amount he said, "Now Drag-Robe can eat."

The padre understands the Navajo love of drama. On one occasion when several hundred were camped near the mission for a squaw dance, Father Liebler donned his Plains' Indian war bonnet, complete with

all its eagle feathers, dressed in a breech cloth, leggings and moccasins. Jumping on his Indian pony he rode at breakneck speed up to each hogan or campfire with a whoop to ask if they needed anything. The Navajo responded with delight.

Much of the activity at the mission centers around the Common Room. This main gathering place has a hardpacked dirt floor and is furnished with crude splintered wooden benches and tables made of two-by-four wooden horses with slabs for tops. Huge pinyon logs crackling in the over-size native stone fireplace give a pungent fragrance to the air. A single remnant of a luxurious yesterday "back home" is the brass candle sconce. A portable typewriter of ancient vintage, partially hidden by stacks of old newspapers, magazines and unanswered mail, teeters on the edge of a table. A few plank bookshelves augmented by orange crates hold books and papers.

Knives, tools, bits of silver and lumps of turquoise liven a quiet corner where Father Liebler directs the Navajo youth in their own art of silversmithing. He considers this silver work a must because of the augmented income it affords.

On Wednesday nights the Youth Canteen holds forth. Brother Michael—Bing Crosby to the Navajos—is not a crooning baritone, but the Indians like to hear him sing. Bobby-soxers would not consider a lone flute—practiced while sheep herding—a good substitute for Benny Goodman. But the rhythm is right for the Navajo Night chant.

After church every Sunday the whole congregation goes into the Common Room to sing hymns. Usually glasses of milk are passed around. The Indians—old and young—color hectograph pictures of the gospel lesson for the day, with the text in Navajo at the bottom. Randolph Bennally, who is one of their most faithful members, has an unusually beautiful voice and leads the singing. The padre secured a number of phonograph records of Hopi tunes which is one of his ways of teaching the Navajo about another tribe. The Indians love to play these records and they join their voices with the recordings. The padre beats on an Indian drum in rhythm and they love it.

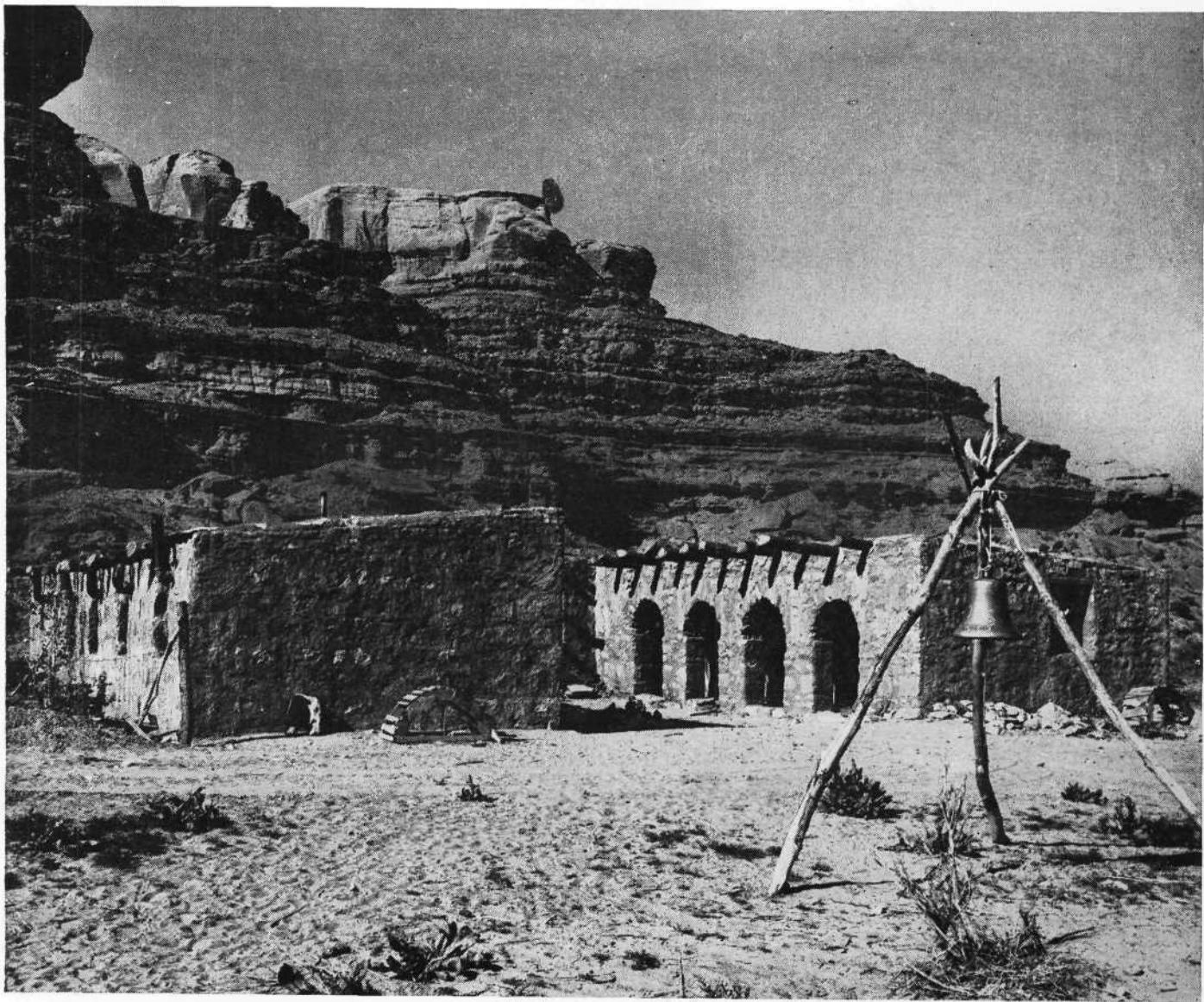
Anywhere in the Four Corners region, driving his battered Ford pickup, Father Liebler's black frock coat and flat-topped hat are well-known: In Blanding he goes for supplies; to Cortez, Colorado, for repairs for the Ford; to Monument Valley to hold service in a roadside shack; or to Fort Defiance to dicker with the U. S. Indian Service for some needed inoculations.

When Twentieth Century-Fox was on location in Monument Valley filming "My Darling Clementine," Director John Ford and Actress Linda Darnell, intrigued with the man and his work, asked the padre to be their guest at dinner. He happened to have two Navajo with him so he accepted the invitation on condition that his friends be allowed to eat with them.

Bluff is predominantly Mormon, but Father Liebler has found his neighbors to be genuinely tolerant. When the staff first came the people of Bluff gave them garden produce, lent them tools and horses and were generally helpful.

For some time the padre has been secretary of the Bluff Irrigation Ditch association. On one occasion there was a squabble over water. "Water in this desert country is more precious than gold," he explained. "One man said he'd rather kill an Indian than let him have water." Father Liebler settled the dispute. The Indian got his share of the water and Father Liebler is still secretary of the Irrigation association.

In his approach to religion, the padre is



The mission and school nestle at the foot of the sandstone cliffs which gave Bluff, Utah, its name. Father Liebler laid many of these stones with his own hands. Photo by George Thompson, Espanola, New Mexico.

wise enough not to tap the Navajo on the shoulder and say: "Do you want to become a Christian?" Instead he lives and works among them, using and adapting Indian customs whenever possible. "Because," he said, "I soon found that the Navajo religion and living are interwoven to such a degree that you can't tell where one leaves off and the other begins." Many missionaries try to force one religion over another, but the padre tries to teach the Navajo in their own medium.

Father Liebler doesn't preach "Love thy neighbor," he practices it. His nearest white neighbors—the Mormons at Bluff—help to make Christmas Eve at St. Christopher's a happy celebration. The Common Room is lighted only with candles and there is a flaming Yule log in the fireplace. The good ladies of Bluff busy themselves in the kitchen helping Brother Michael prepare refreshments. Father

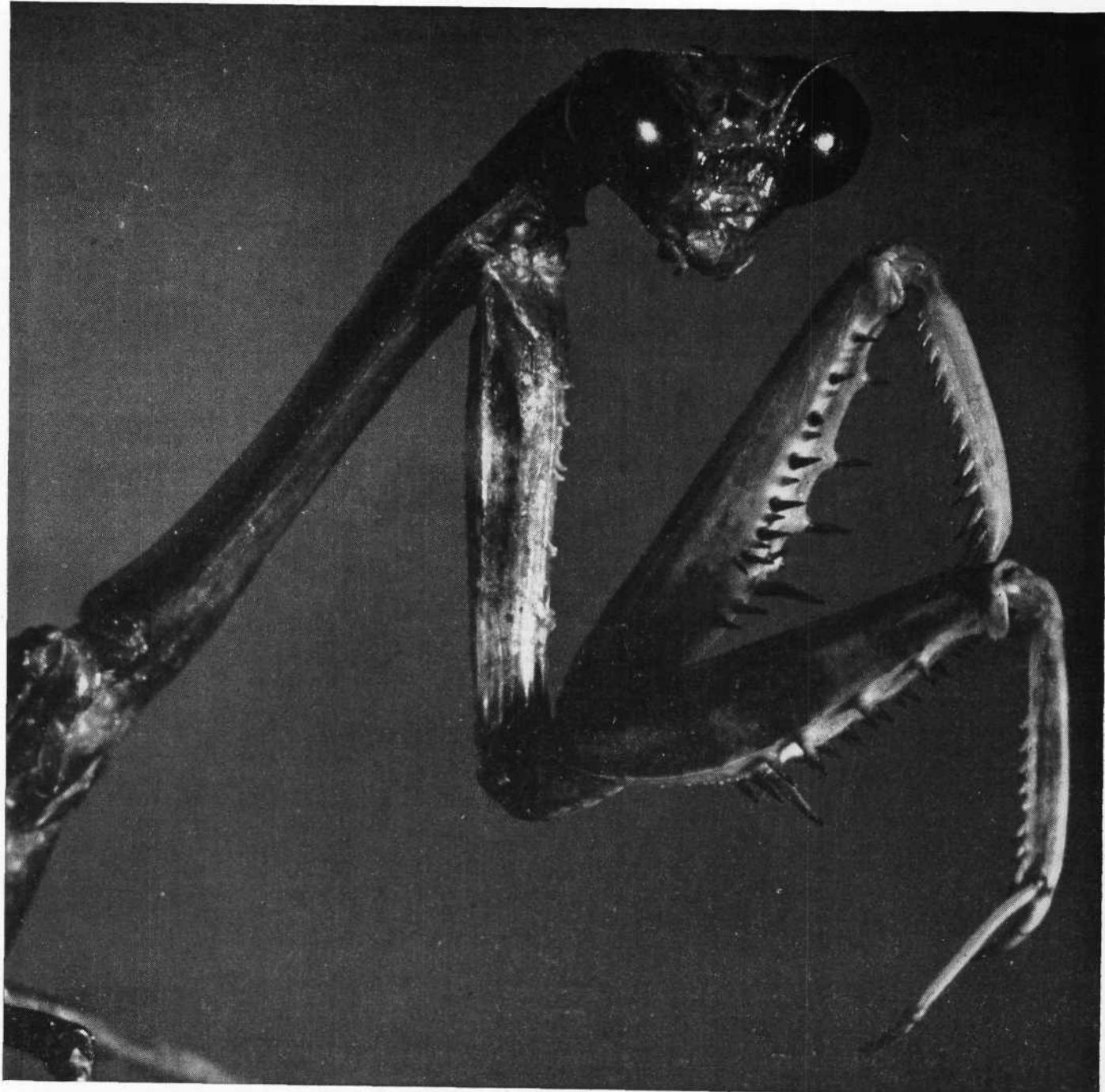
Liebler tells some Christmas stories and ends with the legend of St. Christopher. Then they sing carols until midnight when the altar candles are lighted and the midnight service begins.

Music lessons as a boy, glee club singing in college and a natural love for music were of infinite help to the padre in developing a strictly Indian musical church service, one which is used exclusively at St. Christopher's. The Kyrie he adapted from a part of the Hopi Snake dance chant; the Sanctus and Agnus Dei are Omaha and Zuñi melodies, slightly adapted to fit the words; the Navajo Night chant is used from time to time.

We shall never forget our last evening at the Mission during Vesper service. The air was heavy with the smells of incense, of sweat, of burning juniper and sagebrush. Hashka'an reminded some of the thought-

less to remove their hats. Randolph Benally who was passing by the mission bringing his sheep in for the night heard the singing inside and suddenly he joined in with that hauntingly beautiful Navajo Night chant. For the moment we forgot the singing in the chapel and listened to the melody outside. As his voice faded in the distance we suddenly realized that it had been in perfect harmony with the singing inside. Looking again at the music we were holding we saw that Father Liebler had adapted the words to the Indian melody and then we understood. The Navajo shepherd's song had been different from ours but the melody was the same!

Perhaps that is the secret of Father Liebler's success with the Navajo at St. Christopher's. He has found the touchstone that brings harmony between people. He has learned that the words may be different but our melodies are the same.



He's not as Pious as he Looks

By RICHARD L. CASSELL

THIS strange member of the insect world derives his common name from the pious pose he assumes when he is at rest—the Praying Mantis.

Actually, he is ugly and awkward and is said to be a cannibal. The species best known in the Southwest—*Stagomantis carolina*—is smaller than the Chinese mantis, and is found over a wide area.

The habits of all the mantids are about the same, however. Related to the grasshopper, this insect has developed enormous front legs which seize and hold a quarry as big as itself.

Due probably to its malignant appearance, the creature is held in superstitious awe by some native tribes. Many believe the bite is poisonous, but it has no venom and while it can bite, it leaves no infection.

One of the riddles of Nature is the mantids' eyes, generally being yellow in daytime and brown at night. With a very flexible neck, it can turn its baleful eyes in any direction.

As a flyer the mantis is not strong, its slow fluttering motion reminding one somewhat of a helicopter in miniature. In some species the wings serve as camouflage, being highly colored to match leaves and blossoms of the flowers where it lays in ambush awaiting the nectar-feeding insects.

The mantis deposits its eggs in masses, covering them with a quick-drying mucilaginous substance. The nests are attached to the stems of plants in late summer or fall. The next summer the young emerge and grow to maturity after several moults.

He's not as pious as he looks—not as dangerous as some superstitious folks would have us believe.



Walpi on the Hopi First mesa is perched precariously on a treeless island of rock. The dirt roads leading to the Hopi mesas are crossed by many dry arroyos which become treacherous torrents when rains fall. Normally there is little rainfall in this area until late August—but visitors should keep a weather eye on the clouds.

Warning Rattles for Snake Dance Visitors

By RAY JACKSON MILLER
Photographs, courtesy
Riordan Collection

OME time during August, eagle feathers will dangle from the ladder poles that project through the hatchway in the roof of a kiva. This will be on one of the three Hopi mesas in northern Arizona. The priests of the Antelope and Snake Clans are assembled below in underground council chambers.

Word of the feathers is quickly passed about the village, and Indians collect outside the kiva. Some stand in small groups, while others sit on the flat roofs of nearby hogans.

The Hopis wait with keen interest while the priests confer on signs they have seen

in the sun, in the moon, and in the dryness of the silk on the ears of ripening corn. From these they determine the date of their annual snake ceremony.

There is a general murmur from the waiting Indians as a slim figure emerges from the kiva. He steps from the ladder to the adobe roof. He is the oldest and most learned of the snake priests, yet there is nothing in his dress to show his office. He raises his hand and there is silence.

The priest's lips open and he speaks in low harsh tones that seem to come from far back in his throat. He tells them the dates of the coming Snake dance and the villages in which it will be held.

Runners are sent out to the other Hopi villages with the news. The traders hear it from their Indian customers, and so the

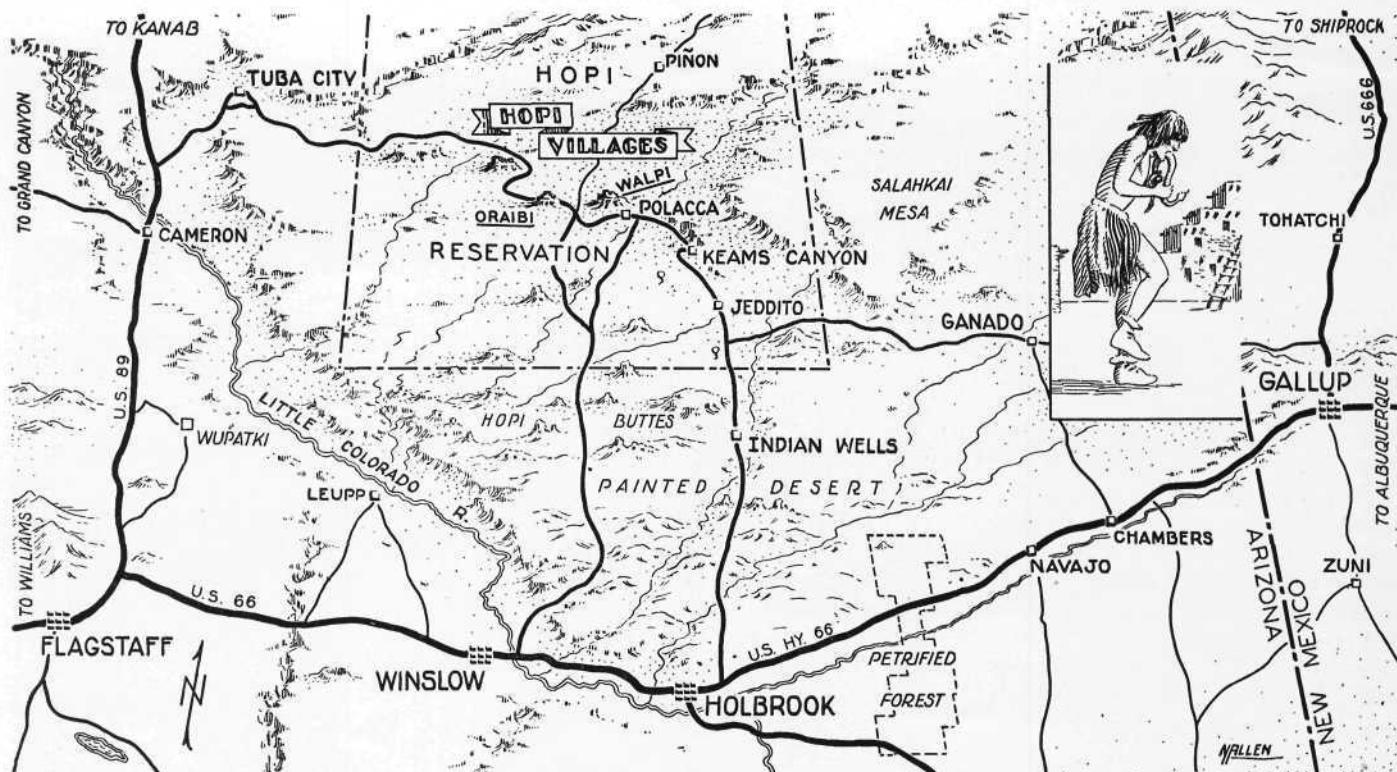
The annual Snake dance of the Hopi Indians in northern Arizona is not a fiesta—it is a religious ceremonial of deep significance. Each year in August increasing numbers of visitors witness this strange rite, and many go back year after year. Here are some useful hints for the guidance of those who plan to attend this ceremonial this year or in the future—written by a man who has witnessed the dances many times.

date of the annual Snake dance filters along until it reaches the outside world.

The newspapers will give it only a few lines and there will be no heavy headlines to attract your attention. There is no reason for advertising because nothing is offered for sale and there are no gate receipts to boost.

It is worth the time and effort to see this primitive rite of the Hopi Indians. It is the most colorful and spectacular of any Indian ceremony.

The Snake dance of the Hopi Indians is held on one of three Hopi mesas in the



center of the Painted Desert. I have been going to these dances since 1914. Still I return every year. It is not only the dance, but there is something about this Indian country that lures me. The trip may be easy or it may be tough, so to those who go I will pass along a few warning rattles.

Live rattlesnakes are used in the dance, but the Indians won't give you one for a playmate, so have no misgivings.

The Painted Desert in August and September, or during the rains, is a treacherous country. Carry skid chains, shovel, axe, tow rope and a tire pump. Also, be sure

your gas tank is full when you leave the paved highway. I always carry extra gas. One year I got dysentery, so now I carry a supply of drinking water and drink pop when I can get it. The desert is cold at night and you may be caught out overnight. Last year over 300 people were marooned on the mesa by the rain and washouts. The school house and church were left open, and the Hopis made room for many in their pueblos. Many slept in their cars and bought Indian blankets at the trading post to keep warm.

There are no restaurants on the mesas,

but the Indians generally improvise a hot dog stand and sell coffee and soft drinks. Take your lunch. It is the sure way to provide a good meal, and put in a can or two of fruit for emergency.

There are nine routes by which you may reach the mesas, but do not leave Cameron on Highway 89, or Flagstaff, Winslow or Holbrook on Highway 66, until you get reliable information regarding the conditions of the roads. Remember, there are no modern service stations with convenient rest rooms in the 70 or 80 miles between the highway and the mesas.

Get an early start, even if you are told that the dance will not take place until four or after. Any way you go will be through a country netted with arroyos and dry washes which are dangerous in rainy weather. Watch the clouds, for it may not be raining near you but the run-off from a storm miles away may catch you as it rushes down some wash. Do not cross running water until you have waded through it. Then go in low gear and keep moving, for some of these washes have treacherous sand. Last year, a '46 Oldsmobile was caught in an arroyo. The occupants escaped, but the car was not found for two days. It had been carried downstream a distance of two miles and was a total loss.

At the mesa, Indian police will show you where to park. Remember, this is the Indians' country. You are welcome but not invited. They will treat you with shy courtesy and respect. The Hopis, like other Indian tribes, are superstitious about having their picture taken, but a silver coin or two seems to take away the curse of the "devil box." Taking pictures or carrying a

Visitors to the annual Snake dances perch on the housetops overlooking the ceremonial plaza.



camera is positively forbidden at the Snake dance. Don't try it.

At any other time the Indians will pose for you. Most of them will refuse currency. They want silver. Make your bargain and pay them before you take the picture. They will live up to their agreement and will try to pose to your satisfaction. To sneak a picture may result in your camera being confiscated or broken.

Indian police will direct you to the plaza on the mesa top. You will find it surrounded by flat roofed houses built of rock and adobe, from one to three stories of the pueblo type. You can identify the plaza by the kisi. This will resemble a shock of corn, but it is built of fresh cottonwood branches with the leaves untrimmed. An opening on one side is curtained with a tanned deer hide. On the ground in front of this opening a short cottonwood plank covers a small pit, called *si-pa-gug*, and makes a sounding box. In choosing a spot from which to view the dance be sure you are able to see this side of the kisi.

In late years it has been customary to pay the owners of the hogans for the privilege of sitting on their roofs. Among the Hopis, all property rights are vested in the women. So hunt up the lady of the house and make your deal.

Here is another rattle. Do not intrude in the houses. Ask, and you will never be refused, for the Hopis are hospitable but they resent being scrutinized like a freak in a side show. They are proud, and this is their home. Do not make any comments unless it is to praise something. A good target for that is their baby, strapped in its cradleboard. Your praise will come easy and be genuine. Notice the war records of the family. You will find them framed and hung on the wall. You will find a number of purple hearts and citations of many grades of distinguished service.

Late in the afternoon, the Antelope clan files into the plaza. There is no fanfare or attempt at showmanship. None is needed. The dance proceeds without a narrator or lecturer. It is a religious ceremony, and those who view it are soon gripped by its solemnity.

The last rattle is for the ladies. The Snake dance is held on the Hopi reservation which is entirely surrounded by that of the Navajo. Neither the Hopi nor the Navajo approve of sun tan suits.

Look for the news item. You have plenty of time to prepare for the trip, for the clan spends nine days making prayer sticks, and gathering snakes. Their regalia must be put in order and their prayers said in the kiva.

Arrive there early, for last year several hundred cars never reached the mesa on account of the rain.



Above—Antelope clansmen lined up in front of the kisi where the snakes are concealed, awaiting the coming of the snake priests.

Below—Snake priests returning to their kiva after releasing the snakes on the floor of the desert below following the dance.

Cover Contest Winners ..

First prize in Desert Magazine's annual photo cover contest, held in June, was taken by Nicholas N. Kozloff, San Bernardino, California, with a picture of six prickly pear blossoms, taken in Cajon pass. Second place went to Joseph Muench, Santa Barbara, California, for his photograph, "With the Navajo Flock," a winter scene in Monument Valley.

The winning photos will serve as future covers for Desert Magazine.

Magnetic Bombs From Pisgah

The idea of bombarding the earth with bombs from the sky did not originate with man. Nature was doing it thousands and probably millions of years ago. One of the most recent of these aerial bombardments came from Pisgah crater on the Mojave desert of Southern California. The bombs are still lying on the desert around the volcanic cone. But while man-made bombs are designed to explode, or repel other objects, Nature worked on the opposite theory. Her bombs attract—through magnetism. Jerry Lauder milk tells us more about them in the accompanying article.

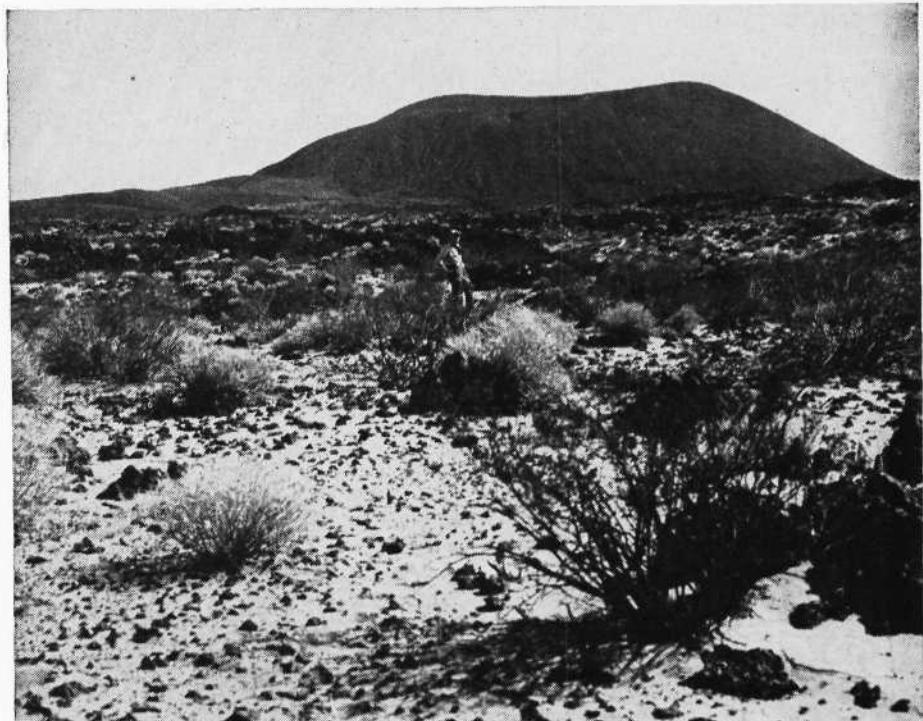
By JERRY LAUDERMILK
Sketches by the Author

HERE were four of us, three rock fans and myself floundering upward through the boot-ruining slope of cinders and volcanic ash that forms the cone of Pisgah crater on the Mojave desert. It was my tenth and most recent visit to the old slag heap. We were on the trail of volcanic bombs of a very unusual sort, which, so far as I am able to learn, have never been described before—magnetic bombs.

Before I move along with my story, I want to refresh the memories of those readers of *Desert* who may not be acquainted with Pisgah crater and volcanic bombs. Pisgah is recently extinct—it may be only a few hundred years old—a volcano of a type rather common in the desert country of the Southwest. It is a ring-shaped heap of cinders surrounding a crater whose floor is a tumbled pavement of black basalt. The cone, which stands out against the sky-line about 30 miles east of Daggett, California, dominates the lava flow which spreads over the desert like an ink spot on a map.

Now about the bombs:

These are hunks of lava that were shot from the crater by explosions of gas within the hot magma as it rose to the surface. Once white hot and plastic, these gob of melted basalt hardened rapidly as they hurtled through the air to form interesting shapes of stone. Now, these chunks of cold basalt resemble such homely items as sweet potatoes, avocados, pickles and bananas and on down the scale of groceries to things like petrified pecans and peanuts. All are made of the stuff that Pisgah poured out by the millions of tons in the days of her booming youth—black basalt. Unlike the military article we think of when we say "bombs" these are solid ex-



Source of the magnetic bombs—Pisgah crater viewed from the north. The surrounding area is covered with basalt and other forms of lava.

cept for gas bubbles, a regular feature with most of the lava that makes up the flow.

Basalt, just in case you have forgotten, is a type of lava which may be of any color but is usually grey or black. At Pisgah it ranges from yellow and orange through vermillion to purple and black. It is most commonly black. Had this melted rock-stuff cooled quickly it would have frozen to obsidian or volcanic glass. Slower cooling would have allowed large crystals to form and the product would have been a dark, coarse grained rock called gabbro. The chemical composition varies but to qualify as basalt the rock must consist of about half silicon dioxide and smaller percentages of aluminum, iron, calcium, magnesium, sodium and potassium, all as oxides, and traces of rare elements like vanadium and titanium. Iron, the most important constituent from the standpoint of my story, is usually present in the proportion of five to eight per cent. The color of basalt depends upon the amount of iron it contains. With much iron it will be grey or black.

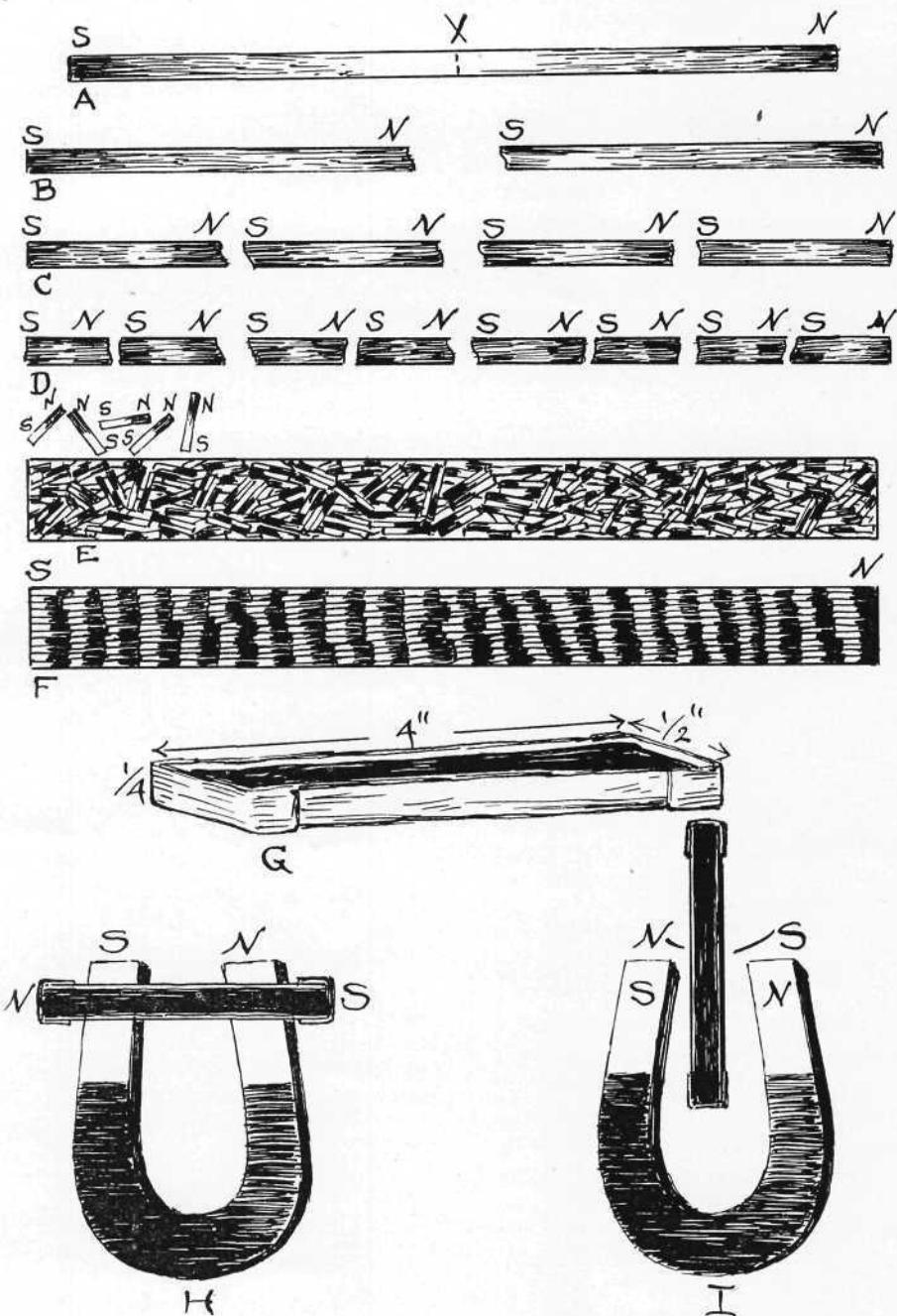
Most of the bombs from Pisgah are lighter colored than the basalt of the flow although they all came from the same batch of melted rock. As a usual thing the bombs are ash-colored with a suggestion of rusty brown—practically the color of a rat.

The mineral magnetite or lodestone is

a chemical compound made up of three parts of iron to four of oxygen. It's common stuff and sometimes an important ore of iron. More frequently it occurs as scattered grains in igneous rocks such as granite. It also occurs abundantly as black sand. A common horseshoe magnet dragged through sand from a wash will pick up more or less magnetite as black grains dangling from its ends. Gold panners soon learn that next to gold, black sand is the heaviest stuff remaining in their pan after the lighter sand and gravel have been floated out.

Magnetite is frequently polarized. That is it sometimes behaves as a magnet itself. In fact, this natural magnet was the first source for making compass needles. Ordinary specimens of magnetite, while of the same composition as lodestone are unpolarized and powerless to pick up other pieces of iron but may themselves be attracted to another magnet.

The only common elements that are easily picked up by small magnets are iron, nickel and cobalt. Iron and steel are the most familiar materials for making magnets. When a steel rod has been magnetized it gains a new quality which makes it entirely different from an unmagnetized piece cut from the same bar of metal. If you suspend one of these magnetized rods by the middle it will finally steady itself in an approximately north-south line. In most



The why of magnets: A, a long magnet broken at X makes two new ones as shown at B; you can't have half a magnet. You could break your magnet as at C or D or on down to the final iron molecules as shown at E and each molecule would still be a tiny magnet. E, an unmagnetized iron bar, consists of a helter-skelter multitude of magnetic molecules. F, when such a bar is placed inside a magnetic field the molecular magnets are pulled into orderly array and the total effect gives the bar an N and S pole. One proof of this explanation is shown at G by using a shallow copper trough filled with melted paraffine and iron filings. H, when the wax hardens within a magnetic field as shown it develops end polarity. I, if cooled lengthwise of the magnet's poles, the poles of the wax magnet will be developed along its opposite sides; this condition is sometimes found to occur in the magnetic bombs.

places it points a little off true north because the rod, actually a compass needle, points toward the earth's magnetic pole and not toward the north polar axis. So a magnetized rod is said to be polarized since it has a north-seeking end and one that points in the opposite direction. This compass needle is, of course, familiar to most

folks as a handy means of finding one's way about over the earth's surface.

But a compass needle also furnishes a delicate means for telling whether or not materials are magnetic and whether they possess polarity. In testing a mineral it is enough to hold it near a compass needle at rest. If the specimen is magnetic the needle

will swing toward it. If the sample is itself polarized and one of its poles brought near the needle, then, the identity of the pole, whether north or south, can be found at once by the way the needle responds.

A short time ago some local *petrophiles* (a word I have adapted from the Greek meaning "lovers of rocks") and I were trying the effects of mineral specimens upon the compass needle. We had explored the possibilities of most varieties of iron ore when some one asked what would happen if black volcanic glass, known to owe its color to a cloud of tiny magnetite particles, were to be tested. I hunted up a specimen but it made no difference how we held it, the needle showed no interest whatever. Next we tried a hunk of vesicular black lava from Pisgah crater and the needle ignored this specimen also. Several other fragments of lava were tested and the results were the same—complete indifference on the part of the compass.

Next I tried the effect of a bomb shaped something like a wilted dill pickle. Here was something different. The needle swung around as brisk as life with its north-seeking pole pointing toward the bomb. We were all completely astonished and supposed, of course, that the ends of the bomb would be the parts most strongly polarized. The ends were polarized but not in the way we expected. If we held the ends (either end) slightly above the needle it would be repelled but if held a little below the needle's tip it would be attracted. The meaning of this finally became clear. The areas of different polarity were equally strong on the opposite sides of the ends of the bomb. More tests with the needle showed that one entire side of the bomb from end to end was a north side (pole) and the other the south.

A thing like this is enough to rock an observer back on his heels; it was downright improper. I hauled out all my bombs from Pisgah. Some were big, almost a foot long, others little things the size of pecans. They were all tested and results grew stranger and stranger. Some were complete duds, others showed polarity but only over small areas on their flattest opposite faces. Only two out of 20 showed end polarity. Here was a challenge not to be ignored and the result was my tenth trip to the crater.

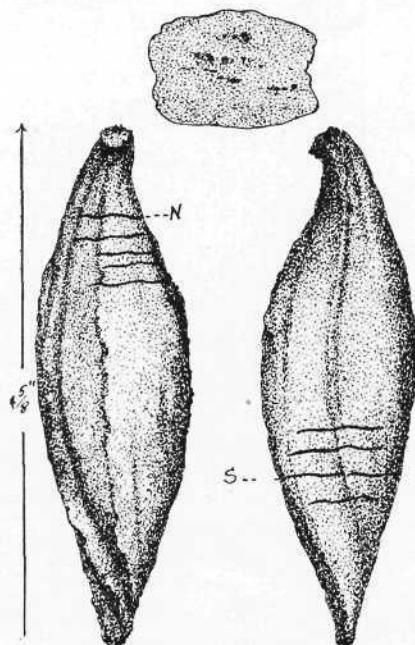
We found bombs galore. But at the crater itself all tests were unreliable since the whole area seemed to be a magnetic field and it was only when we had carried our bombs about a mile away from the cone that we had satisfactory results. One of the bombs picked up was a unique specimen. It had dropped onto the still soft surface of the flow and stuck there like a petrified lemon glued to a hunk of slag. The bomb was strongly polarized but the lava to which it had pasted itself was inert.

Just why these bombs are magnetic is a mystery too recent for a ready answer; but

there are several pieces of evidence that point toward a solution. If a magnetic bomb is crushed to small pieces about the size of match heads the fragments can be picked up by an ordinary horseshoe magnet. Close examination of a fresh surface shows many tiny, glittering points of black mineral that look like magnetite and if a bomb is ground to fine powder a little heap of magnetite can be separated by the magnet. Although the flow lava at first was thought to be inert, small chips the size of a pin head were feebly magnetic showing that some magnetite was present but in such small proportion to the non-magnetic material that it couldn't pull the dead weight of very large pieces along with it when influenced by the magnet. So much for the bombs just now since this is a good place to look into the subject of magnetism in general:

There are a good many details about magnetism which are still awaiting final answers; but in its broader aspects the subject is well understood. For instance, if a bar magnet, either of steel or one sawed from a piece of lodestone, is broken in two, each piece will be a complete magnet. If each of these is broken you will have four separate magnets. Now from this it can easily be understood how a magnet might be broken into ten, a hundred, a thousand or a million pieces to make as many smaller but complete magnets as there might be fragments. So it is only reasonable to assume that this property of being polarized might continue on down to the molecular

*A bomb with poles on opposite faces.
Lined areas are those with strongest
polarity.*



structure of the magnetic material and there is strong evidence to show that this idea is correct. In an unmagnetized steel bar or piece of lodestone the molecules that go to make it up are considered as being tiny magnets but so jumbled that mutual repulsion between their poles cancels out any polarity of the bar as a unit. According to this view, when a bar is magnetized the molecules are swung around with their north ends pointing toward one end of the bar and their south ends toward the other so that the bar now shows the collective result of their polarity.

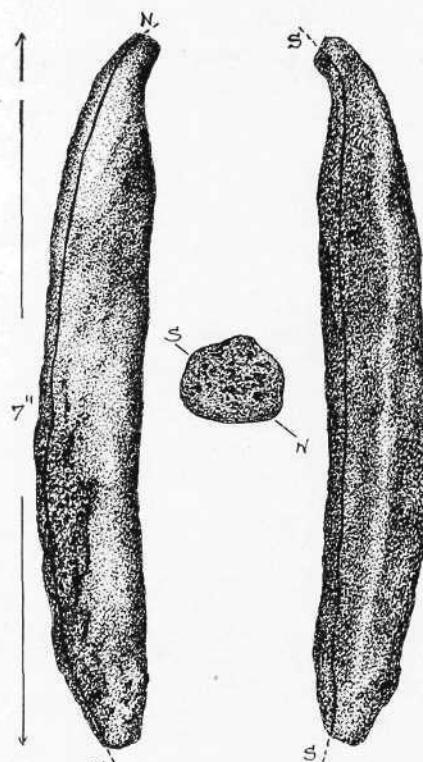
This theory is very probably true since a magnetized bar is slightly longer than a similar but unmagnetized piece cut from the same rod. Accurate measurements show that when the piece is fully magnetized it will be longer by about $1/200,000$ of its length. While being magnetized within an electric field a faint sound is produced by movement of the molecules within the bar. This *Barkhausen effect* as it is called, can be shown in a very impressive way and a piece of steel can be made to "blat" the whole story of its internal wrigglings as it is being magnetized.

The most satisfactory way for making a strong magnet is to place it inside a coil of copper wire carrying an electric current. As the current flows through the coil it sets up a secondary or induced current in the bar. When this induced current is led

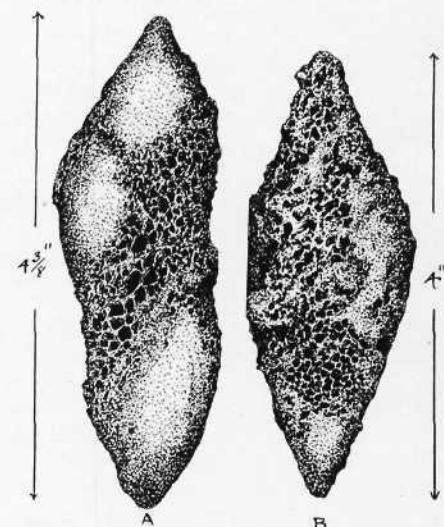
through an amplifier and then through a loud speaker a continuous series of clicks can be heard until the bar is entirely magnetized or saturated. Further evidence that the magnetization of a bar is molecular is shown when the surface of a magnet is etched with acid and an emulsion containing very fine steel filings is spread over it. The filings orient themselves in more or less parallel lines over patches of the metal. Some of these patches are at right angles to the others. On increase of magnetization more and more of the patches, actually large molecular clusters, fall into line with the polarized patches until the entire bar shows polarity. Since it seems evident that the polarity of a magnet results from the polarity of countless tiny magnets that make it up; then it ought to be possible to make artificial magnets from aggregates of tiny magnetizable particles. All this has bearing upon the magnetic bombs but first I will show how I made my artificial magnets.

I made a shallow copper trough four inches long and half an inch wide and filled it nearly full of melted paraffin. Fine iron filings were stirred in until the trough was brim full. The mixture of hot wax and iron filings was stirred until it began to harden. The little bar of wax and filings was next removed from the trough and tested with the compass needle. Although the bar was magnetic so far as attracting the needle was concerned, it was not polarized. So next I remelted the bar and placed the trough and its contents across the poles

*Bombs with longitudinal polarity.
The black N-S line shows area of
strongest polarity.*



*Two "duds" which show no polarity.
A is a cluster of three bombs, B is a
single piece of lava.*



of a strong magnet to cool and solidify again. Before the bar had hardened enough to be opaque, the filings could be seen to have strung themselves out in long chains extending from end to end of the trough. The cold bar was removed and now showed strong polarity. So far so good.

I repeated the experiment but in this case I used powdered magnetite which was magnetic but unpolarized. As in the case of the iron filings the jumbled particles in the bar when allowed to cool naturally prevented polarity of the bar as a whole. Now, I reheated the bar and cooled it upon a magnet as in the other experiment and the cold bar was strongly polarized. These experiments showed that permanent magnets could be made by acting upon an aggregate of a vast number of tiny particles. The next experiment offers a probable solution to the fact that some bombs have lengthwise rather than terminal polarity.

I remelted the bar with the magnetite particles and let it cool between the poles of a magnet so that the chains of magnetite particles arranged themselves across instead of lengthwise of the copper trough. The cold bar was found to have its poles extending along opposite sides just as was the case of the first volcanic bomb we examined.

As the story stands, my theory to account for the magnetism of the bombs is that while both kinds of lava, that from the flow and that from the bombs, contains magnetite, the flow lava shows no polarity because slow cooling and constant motion of the hot mass as it crept over the terrain prevented any orientation of the magnetite particles suspended in the fluid mass. In the case of the bombs, cooling was rapid, each bomb was actually a single unit containing an isolated swarm of magnetite particles. Before the soft mass of the bomb had become too pasty to allow free motion of the particles of magnetite, these had arranged themselves in some predominantly definite direction so that in the aggregate there were enough oriented particles to give polarity to the bomb when it froze. The orientation of the particles could have resulted from the magnetic field at the crater area where a vast amount of magnetic material is carried by the basalt or it could have resulted from fields generated by static electricity which always accompanies a volcanic eruption.

Before the mystery of the magnets from Pisgah is completely cleared up, I may have to trek up Pisgah's cinder cone for the eleventh time. In a case like this there are always loose ends to be rechecked and any excuse to go back to the desert is a good one. In the meantime I suggest that rockhounds who have gone in for collecting these souvenirs from the infernal regions get out their compasses and test other bombs from other craters.

FORTY-NINE PALMS OASIS SWEEP BY FIRE

Flames and smoke which spiraled 3000 feet into the air on June 23, marked the burning of 49 Palms oasis in Joshua Tree national monument. Before the fire was put out by the forestry fire department, national park service men and others, it had swept 1 1/4 acres in 49 Palms canyon. The dry fronds on 44 of 53 large palms reportedly were burned. Hope is held that a majority of the trees will live, although badly scarred. Partially burned were six large palms, 18 young ones, several cottonwoods and mesquites. Two young men found near the oasis admitted, when questioned by rangers, that they had built a campfire but declared they had extinguished it before leaving.

NEW COLONIZATION PLANNED FOR BAJA CALIFORNIA

The Mexican government reportedly has signed a contract with the Compania de Terrenos del Colorado, formerly the Colorado River Land company, which will permit the company to colonize 67,000 hectares of land (165,000 acres). The tillable area will be divided into lots and sold to the colonists. According to the agreement, the company will have five years to sell the land and receive payment. After the five year period, the land which has not been divided into lots and sold to colonists will be subject to expropriation. The Compania de Terrenos del Colorado has large land holdings in the Colorado delta known as Mexicali valley. Wheat, flax, barley, alfalfa and cotton are among leading crops of the area.

TRUE OR FALSE

tires is to spend an hour each month with Desert Magazine's quiz lesson. You'll not answer all these correctly, but it is no disgrace to be wrong. Twelve to 14 is a good score. Fifteen to 18 is excellent. Nineteen or 20 is too good to be true. Answers are on page 35.

- 1—Desert mirages are seen only during the summer months.
True..... False.....
- 2—The Rainbow Bridge national monument is in Arizona.
True..... False.....
- 3—The berries on desert mistletoe are salmon-pink. True..... False.....
- 4—The old trail known as *Camino del Diablo* (Devil's highway) crossed the Colorado river at Yuma. True..... False.....
- 5—Charleston peak may be seen from Las Vegas, Nevada.
True..... False.....
- 6—Greasewood or creosote bush never grows below sea level.
True..... False.....
- 7—Indian symbols incised in rock with a sharp tool are known as pictographs.
True..... False.....
- 8—Stalactites form on the ceilings of caverns, stalagmites on the floor.
True..... False.....
- 9—A chuckawalla lizard is more venomous than a Gila monster.
True..... False.....
- 10—The man who killed the notorious outlaw Billy the Kid was Wyatt Earp.
True..... False.....
- 11—As far as is known no human beings inhabited Death Valley before the white men came. True..... False.....
- 12—A roadrunner will attack and kill a rattlesnake. True..... False.....
- 13—Woodpeckers often drill holes in the trunks of Saguaro cacti and make their nests inside. True..... False.....
- 14—The United States government once declared Utah "in a state of substantial rebellion." True..... False.....
- 15—The capital of New Mexico is Albuquerque. True..... False.....
- 16—The leaves of aspen trees turn yellow in the fall. True..... False.....
- 17—The site of old Fort Callville is now buried beneath the waters of Lake Mead.
True..... False.....
- 18—Malachite is an iron ore. True..... False.....
- 19—One of the desert's most spectacular programs—the Inter-Tribal Indian Ceremonial—is held annually at Gallup, New Mexico.
True..... False.....
- 20—Beaver trapping is still an important industry along the Colorado river.
True..... False.....

Little Ghost Town



By *GRACE PARSONS HARMON*

Manhattan Beach, California

Art by

*Harry Oliver
Fort Oliver, California*

Shadows creep along faint trail-marks through
the ghost towns,
Little ghost towns where lost golden dreams
lie still;
Desert devils race unheeded through the ruins
Where the desert-purpled glass sags from the
sill.

Rawhide, Calico and Skinflint had their
heyday,
Shinbone Peak and Ground Hog's Glory
showed the ore,
Chinese Camp and Rough-and-Ready scratched
the pay dirt,
Dead Mule Canyon and old Charleston are
no more.

Little ghost towns where the valiant spirits
wander,
Little ghost towns where they worked and
loved and played,
Now the crumbling walls are broken, roofs have
fallen,
Only pack rats cache the treasures that they
trade.

In the sunset's gold or desert moonlight's
silver,
Soft sounds croon about the crumbling walls,
But the happy days of hope and love and
laughter,
Find no answer, when the voice of Memory
calls.



Marion Reese and Smoky at the cabin in Copper canyon where Marion lives alone, painting, prospecting and studying.

Artist of Copper Canyon . . .

Folks with creative minds never grow lonely—and that is why Marion Reese, after an active life on the desert frontier, finds happiness in a little cabin in a canyon where her only companions are the animals which share her dooryard. Her modest livelihood comes from the things she creates with her hands, and a lively imagination.

By HAROLD O. WEIGHT

I PICKED up the ancient sherd of pottery in surprise. On its reddish convex surface an Indian rider and his pony were painted in tempera. The "canvas" was the most unique I had ever seen, and I wondered who had thought of the strikingly appropriate use of bits of Indian pottery for Indian portraits. Ida Smith, who had the sherd in her shop at Top O' Th' Pines near Prescott, Arizona, noticed my interest.

"Marion Reese painted that," she said. "I think you would like Marion. She lives alone in a mining cabin in Copper canyon south of here. A hermit? No, I certainly wouldn't call Marion that! She's driven stage coaches and freight teams and taught riding—and once she was woman rodeo

champion of Nevada. Ill health forced her out of that sort of work, and she turned prospector. Painting has been a hobby. I sell her paintings and rock novelties which she makes from specimens she collects from abandoned mine dumps.

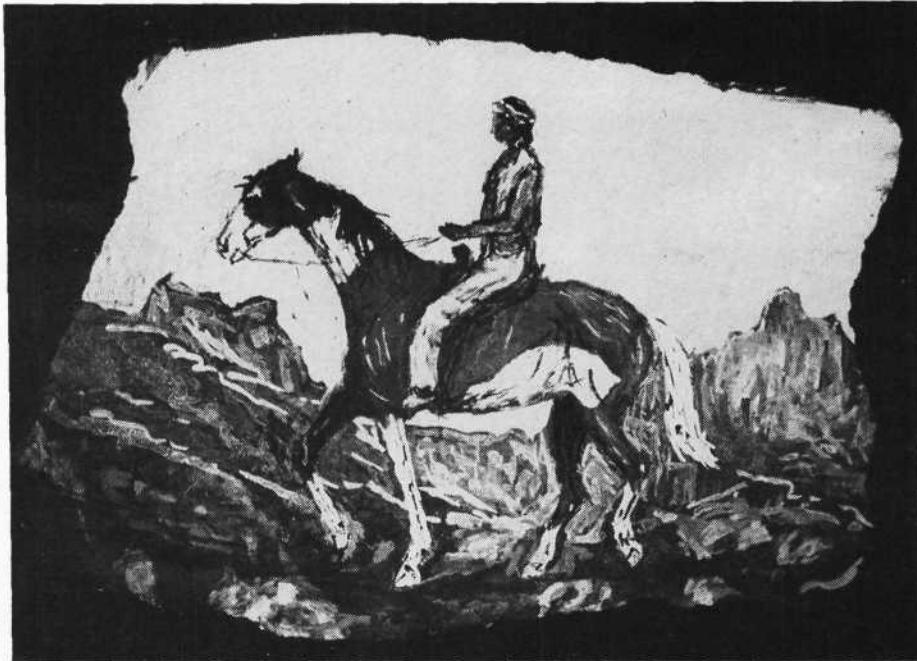
"She always has loved horses. She might paint them even better than she does, if she hadn't loved them so much. She left art school before graduation because she was homesick for the horses on her uncle's ranch in Montana."

I was not enough of an artist to judge the quality of the painting. But as I looked at it, I was certain Mrs. Reese must understand how a horse stands and moves and even thinks. That little Indian pony was alive.

I went with Ida Smith to visit Marion Reese. Six miles southwest from Top O' Th' Pines, we left Highway 89 for a dirt road that dove head-first into Copper canyon. It looped back so abruptly on itself that I had to see-saw to make the turn. Then it plunged through a concrete conduit that carried Copper creek through the highway embankment.

"Marion brings her Model A around these curves as if she were still riding a half-broken bronco," Mrs. Smith lamented. "I'm always afraid we'll have to fish her out of the canyon."

The road wound down through box elder, ponderosa pine and juniper. The small creek was blue with the copper which makes it undrinkable and forces Marion to haul domestic water. It was May and we caught occasional flashes of the bright red blossoms of the strawberry cactus against the rocks. We came to the cabin, beside the creek and under the el-



Navajo—painted on a pottery sherd by the artist of Copper canyon.

ders, about a mile above the Hassayampa river.

Ida Smith had described Marion Reese well. She is tall and slender, and her face is lined. She has lived an active life and one that sometimes was violent. But that is passed now and she seems possessed of peace and warmth and quiet, and an inner strength which often is the mark of those who live intimately with Nature.

Marion lives alone only in the sense of lacking human associates. Her companions are Smoky, an 18-year-old shepherd dog who is totally deaf and who "doesn't see too well any more," two cats, chickens, and a family of grey squirrels who scamper about the cabin roof, successfully frustrating the cats.

The cabin had a lived-in look. Chickens scratched in the yard, rock specimens were heaped against the walls. Great stacks of wood, which Marion had hauled in and sawed herself, were mute indicators of the coldness of winter in these mountains. She was preparing for the needed warmth on long days when she would paint, read, study botany and mineralogy, and watch the comings and goings of small wild things which gather about the cabin to be fed.

The interior of the cabin was friendly and informal. There were many pictures, especially those of horses. Marion showed me some of her paintings and sketches. "I was always moving, and I would sell my pictures or give them away," she said. "I never got enough time for my painting. Sometimes I dropped it completely, and that isn't good. I've still got a lot to learn and re-learn."

She sat at the table where she does her painting and works up mineral specimens,

looking through an old scrapbook of photos and clippings. She was born Marion Carterett in May, 1892, at Paradise, Montana. Her mother died when she was nine, her father when she was 16. She went to live on the cattle ranch of an uncle, Monroe Mann, in Montana. A cousin, James Kirkpatrick, saw her sketches and sent her to the New England Academy of Arts in Boston.

"One day I just left the Academy," she said. "I was too far from the West and my horses. I guess I scandalized my relatives. They never wanted me to ride, but I just had to work with horses. I taught riding for a while at a livery stable in Boise. In 1911, I taught grade school to Paiute and Shoshone kids at Western Shoshone Indian reservation in Duck Valley, Nevada. That was all right, because I also carried the mail by horseback into the reservation."

In 1912-13, Marion was relief driver for stage lines in northern Nevada and Idaho. Once she had to take the place of a drunken driver who had scared the women passengers badly. The run was between Salmon City, Idaho, and Red Creek, Montana.

"They didn't think much of a woman driver taking over," Marion explained, "but at least I looked sober. When we started down a rocky mountain grade, I found the stage didn't have any brakes left. If the horses had traveled their normal speed, the stage would have ridden into them, scaring them into a runaway or over a cliff. I had to keep whipping them up and trust to fate that the wheels would stay in the ruts. The lady passengers had little faith in fate and none in me. When we got off that mountain they were con-

vinced every driver on the line was trying to kill them. I'm glad they didn't know how scared I was."

Marion left the stage lines to ride in rodeos. For three years she followed the circuits—Pendleton, Cheyenne, Salt Lake City, Calgary and the rest. In 1914, when she was 22, she won the woman's riding championship of Nevada. Rodeo life was getting into her blood. "But I was hurt pretty badly inside on some of those falls," she said. "Finally the doctors told me they wouldn't be responsible for my life if I kept riding."

So Marion retired to the job of postmistress of Deeth, Nevada. Senator Key Pittman recommended her, and she won the position over a number of men. "It used to be a railroad station named Death," she explained. "Somebody thought Deeth would be less gruesome."

Marion went into the trucking business in Idaho with her husband, after World War I. She drove a clumsy Diamond T truck over a regular route. Then came the Model T's. Marion laughed as she showed me a photo in which she was leaning, stiff-legged, against a truck.

"If you've never driven a Model T truck 250 miles a day over primitive roads, you can have no idea of how I felt."

Parted from her husband, and with failing health requiring some not-too-strenuous outdoor occupation, Marion Reese took up prospecting. During good weather, she covers Copper canyon country, bringing home, panning and testing any likely specimens. She hasn't struck it yet, but she does obtain colorful minerals from old dumps, and crucibles which have been used but not broken at old assay offices. By cementing the minerals over the exterior of the crucibles, she makes attractive vases.

The sale of these, with miniature fireplace-ashtrays and other rock novelties which she creates, forms a good part of her small income. And she finds free time to paint, to attend meetings of the Yavapai Gem and Mineral society, of which she is an active member, and to continue her studies of wild life.

Marion Reese closed the scrapbook. "Looking back," she said, "I am satisfied the way things have gone. I just couldn't have lived any other kind of life."

Copper canyon is quiet, after most of a lifetime spent in the rush of the competitive world. Marion welcomes the quiet. But she does miss her horses.

"Friends offer to bring valuable horses and leave them here with me," she explained. "All they ask is that I train the animals. It is terribly tempting and I would love to do it. But I no longer can give them the care and attention they deserve and must have."

"So I guess that from now on my horses will be the ones I can remember—and paint."

Desert Trails

By MARSHAL SOUTH

ABOUT 13 miles down from the mountain town of Julian, California, State Highway 78 shoulders its way into the high and barren desert ridges which form the entrance to Sentenac canyon. And right by the canyon entrance, thrust out Gibraltar fashion amidst the green ocean of tules which parallel the road, there stands a rocky promontory. Upon the top of this boulder-piled headland old Paul Sentenac once had his home.

Paul was an emigrant from France. And, in the 80's, he had a goat ranch at the mouth of the canyon which now bears his name. His stock ranged the surrounding foothills and desert playas and doubtless grew fat on the lush herbage of the tule marshes which are fed from the waters of the San Felipe creek.

Old Paul was a rugged character about whom many picturesque stories still are told. The imagination of the tellers has colored these tales and with the passage of time they have drifted into the province of legend. You may hear many yarns about Paul. And, as would be expected, nearly all the versions hint that he had a cache of treasure. This is quite in keeping with desert tradition, because almost everyone who has become an old-timer or an outstanding character on the desert, is popularly believed to have dug holes and buried away a mysterious cache. Some did, it is true. But not many. However the tale-tellers must have their fling at mystery. Someday, undoubtedly, eager diggers will go prodding and gophering about my old home at Yaquitepec on Ghost mountain. I wish them luck. There was and is wealth on Ghost mountain—but not the kind you can put in holes in the ground.

But it was not with old Paul's legendary treasures or with the details of his picturesque life that we were concerned on the bright desert day when I parked my car in an alcove in the mesquites alongside the highway and made my way on foot across the marshes. I wanted to see his homesite. I had never visited it and had a craving to view at first hand what might be left of this former citadel of a salty emigrant from France.

White faced Herefords of the San Felipe ranch herds dotted the green of the tule marshes with generous splashes of red. Some of them didn't look too friendly, so I detoured to a deserted section before invading their realm.

Water in the desert country has an enhanced significance. And the gurgle of the San Felipe creek, as it swirled about my ankles as I floundered through the tangle of reeds was pleasant. There was much watercress growing among the tules, and, in spite of my water-sloshed shoes, I delayed a little while to gather and nibble some of this tangy herb packed with vital energy which science calls vitamins. The Herefords, browsing afar, watched with suspicious interest, and I reflected that in some respects the dumb animal has an advantage over the self-important human. Animals can rustle their food with a minimum of fuss—and they get all the good out of it. Whereas the lords of creation cannot enjoy a meal without the employment of a host of gadgets.

The first trace of man's abode as I made my way out of a thicket of mesquites and started up the rocky slope was the remains of an old post and brush corral. In her unhurried indifference to man Nature is very thorough. Winds wipe out footprints and storms dissolve walls. And the endless drift of the mellow days consigns, in the end, the mightiest sweat-reared human works to oblivion. As time is measured in human affairs not many years had gone past since that old corral was in active use. Now it was a few forlorn heaps of blackened sticks lost among the desert bushes. But it served to whet my interest.

Sherds of old Indian pottery were scattered on the boulder



On the crest of a boulder-strewn promontory the ruins of Paul Sentenac's "castle" lift above the green of the tule marshes like the remains of some medieval stronghold.

strewn slope above. The dusky dwellers of the desert had appreciated the strategic importance of the site long before Paul had pre-empted it. Pottery is a "book" which reveals many secrets of the lives of prehistoric tribesmen. "Man," says the sage, "was created from the dust of the earth." And, following the example of his own Creator, man himself created his pots from the same material. But the pots survive the physical forms of their makers. And give foothold for the imagination.

Standing there on the slope with a scatter of earth-brown olla fragments spread out before me it was not hard to reconstruct the past. The same silent mountains had rimmed the horizon. The sky had been the same blue. And the far-reaches of the desert had swum in the same haunting elusive haze of distance and mystery. There had been no cattle in the marshes. Nor had there been the ribbon of concrete highway with its shuttles of speeding cars. But it was somehow easy to forget these later details. Brown feet were again on the slopes. And healthy free naked bodies at work or play about the old camps. One seemed to hear voices in a strange primitive tongue. But perhaps it was just the wind, coming up the canyon and stirring through the creosotes.

One may wonder just what dream was in old Paul Sentenac's mind when he settled here and built his castle. For castle it was—at least in the making. The desert has a way of sapping dreams. And more often than not heroic plans wilt bit by bit—even during the sweaty labor of them—until the final result is another monument to futility.

At any rate Paul began his dream on a heroic scale. Massive retaining walls of laboriously piled boulders and powder-cracked rocks bear witness to his toil—and to the play of a directing imagination. The mortarless walls are falling. Storms and vandals have overthrown many of the granite blocks. But enough remains to show that the Frenchman who chose this as his desert homesite had ambitions far beyond the rearing of a mere desert shack. Perhaps he had in mind one of the old feudal castles of his far-away homeland. It may be that in the back of his mind, banners floated from the summits of towers that were pierced with narrow slits through which bowmen could launch their barbed shafts. Perhaps mailed knights trod the courtyards and made a brave show upon the lofty battlements. Who knows? At any rate the beginnings of a dream are still there. But it is a crumbled dream. How full the world is of them.

Let no one think that there was ever any magnificence about Paul Sentenac's residence—even in its heyday. It was probably quite humble—even the scanty remains of the old stone cabin attest that. Perhaps, to a casual visitor, there would appear to be little of interest in the tumbled rocks and the remnants of the old retaining walls. But if one looks deeper, there is a better key to the nature of the builder than is obvious on the surface. Paul had something. One must have something of the poet or the artist or the dreamer to build his home upon a hilltop. Most men build theirs in holes and hollows. It is easier.

Creosotes and cactus grew among the old foundation walls and cluttered the road which once led around the brow of the rocky bluff. There were a few fragments of shattered dishes. A few old nails. Bits of rusty iron and the usual scatter of old tin

cans. There weren't many relics. The place has been thoroughly combed over during the years that have elapsed since Paul died. Among the rocks, though, weather-bleached among scraps of obsidian from ancient Indian arrowheads and cheek-by-jowl with sherds of shattered olla, we picked up an old-time pocket lighter. Upon its embossed copper side was engraved the date of its manufacture—the year 1900. Not much of an antique, but still almost half a century.

Treasure hunters and seekers after Indian relics have contributed in no small measure to the wrecking of Paul's old home. The myth of buried wealth has been responsible for many trial holes sunk within the enclosure of the old walls. Such mining operations bring speedy ruin to any building. And today there isn't much standing that will give any clue to what the house looked like. There are the remains of a small fireplace—with, of course, a treasure hole gaping in the earth not far from it—and a couple of angles of foundation wall. Paul used some old Indian stones in his building. Some of the walls were, on that account, wrecked by relic hunters to extract rubbing stones and metates. The seekers have made a thorough job of it. Nothing now remains to tempt further effort.

None of the stories I have been able to gather about Paul throw much light upon the manner of individual he was. Since it is so hard to judge those among whom we are thrown in daily contact, how shall we form opinions of a man about whom the vague threads of gossip and misunderstanding have been woven for many years since his death. Some say that he was a hard man. Others that he had a wealth of likable qualities. We do know that after his death a brother came out from France to settle up the estate.

But what matter? Human life is a fleeting thing. And after all it is not the physical that counts; nor the success or failure of earthly affairs. The thing which is enduring is something which cannot be seen, touched or measured by material standards. It is the spirit of a man. His ideas—the inner light or urge by which he moves. Such a hidden light burns in every man and woman regardless of the valuation either for good or evil which the world places upon them. And as surely as he lives, each will in some manner in life, betray something of that secret inner nature that is the real self. In the ruins of his desert castle, Paul Sentenac has left his monument and his epitaph. He was one who dreamed dreams. He had something of the divine fire of the poet. The tumbled stones of his hilltop Gibraltar prove it.

With my companions I ate lunch in a shady cove formed by the spreading trunk and branches of an ancient mesquite tree about half a mile from Paul's homesite. In backward glance, through the lacy pattern of leaves and branches, the old castle site lost none of its romance. The warm sunshine of the desert beat down in the silence, and the rocks and ridges and the dim reaches of the desert quivered in the heat waves. The wind drew up from the lower reaches of the canyon in lazy wide spaced drifts that rustled the leaves over our heads and threw a shimmer of sun patterns over the brown twig-strewn soft earth upon which we sat.

Where the old tree grew had once been an ancient Indian burial ground. All around the surrounding area it was possible to pick up pieces of fire-blackened ollas, and according to reports, more than one cache of human remains had been dug up and removed within a few paces of where we sat. But the rustle of the leaves in the gnarled old tree whispered only of peace and forgetfulness and of something better and beyond and more satisfying even than the bright silent sunshine of the desert.

We ate our lunch with peace and contentment in our hearts. It mattered not to us that beside the lunch basket, in the changing pattern of sunlight and shadow, there lay a scatter of tiny fire-scorched bony fragments. We knew they were ancient fragments of human bone. But peace was upon them also. They were part of a mighty pattern that is free from fear. It is the pattern of Eternity.

Although there have been no reports of Sonora otter along the Colorado river for several years, it is possible the animal may not be entirely extinct. If any of Desert's readers have seen this species of otter recently it is requested that a record of the time and place and other pertinent information be forwarded to the magazine staff.

Fur Animal of the Desert Country

By EDMUND C. JAEGER
Sketches by the Author

ON A cold rainy day in 1776, Fray Francisco Garces, Spanish explorer and missionary, met a little group of Mojave Indians at their village near the Mojave river not far from the present site of the Camp Cady ranch 15 miles east of Daggett, California.

The tribesmen were poor and naked, and because of the rain and low temperatures could do no hunting. They were living on tule roots. But within their crude shelters, Garces tells us in his diary, they had blankets made of rabbit and otter skins.

Now the question immediately arises: From what source did these beggarly natives of the arid mid-desert secure otter skins? Since they lived along one of the principal caravan routes trav-



eled by traders going east with furs for the markets in Santa Fe and St. Louis they may have secured these skins from the traders. But it is more likely the Indians had trapped the otters along the Colorado river a hundred miles to the eastward.

The Indians in this village were probably of the Chemehuevi tribe, a people whose principal dwelling place was along the Colorado. They doubtless visited their brethren there as well as the Mojave Indians who dwelt along the river in the vicinity of present-day Needles.

One thing of particular interest in Garces' account is his mention of the ingenious snares made by the Indians of the Mojave river village—snares made of wild hemp cord. It may well be that these snares made it possible for them not only to secure rabbits for blanket-making but also otters which doubtless were plentiful then. It is only in recent years that otters have become rare or extinct along the Colorado.

Sonora otters (*Lutra sonora*) are known to have been seen between Needles and Topock as late as 1920 and farther up the Colorado river as late as 1933. John Leam, locally known as "California Jack" reported in that year that he saw an otter playing on a sand bar at the mouth of El Dorado wash (in Clark

county, Nevada) where it enters the Colorado river. In the same year, Bill Ross, a trapper living a few miles above Needles, secured an otter skin from an animal killed by dogs just a few days before Christmas.

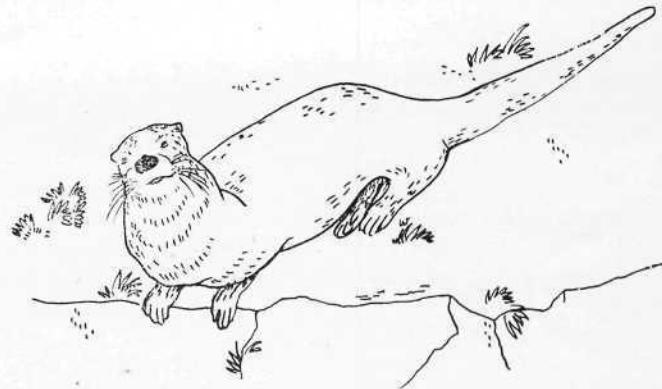
The Sonora otter is a subspecies of the common North American otter (*Lutra canadensis*), differing from otters found elsewhere on the continent mainly in its paler coloration and longer overall body length (about 5 feet, 4 inches). The accompanying drawings show well its form and general features. The otter's head is seen to be rather small, broad and flat; the muzzle very broad, the lips thick, and with strong sensitive whiskers. The eyes are very small as are the external ears. The limbs though short are exceedingly flexible and well adapted for aquatic life. Each of the broad, round feet has five clawed toes connected by webs. The muscular tail, about 18 inches long, is very thick at the base and somewhat flattened. It too is used in swimming. Next to the beaver, the otter was probably the most sought-for fur-bearing animal in the old trapping days and this because of the exceedingly fine quality of its bright rich brown fur. There was a time when famous trappers braved desert heat, mountain snow storms and hostile Indians to reach California to trap otter in its streams. Among these adventurers it may be recalled were Ewing Young and William Wolfskill, men whose picturesque careers are narrated in every good book of early southwestern history.

Otters are almost wholly nocturnal in their habits although at times they may be seen in daytime, especially in early morning or late afternoon. Being exceedingly shy they are seldom observed by humans sauntering along river banks. Their presence is most easily detected by their foot prints on muddy shores, their fecal heaps, their rolling places and scent posts or by their slides on slippery clay banks.

When an otter comes out of the stream one of the first things it does is to get the heavy load of water out of its thick fur. This is accomplished by shaking itself much as a dog does. Then to finish the job it rolls in the grass or other vegetation. As some one once remarked, the grass is the otter's towel on which he wipes himself dry. Such rolling places are used over and over again and so become well defined and easily spotted. Again the otter is given to twisting grass into little tufts or bunches and on these depositing strong scents from the anal glands, thus giving sign to others passing by.

This water-loving carnivore is a born gamester and one of its favorite pastimes is gliding down muddy banks, head downward on the belly, ending its slide each time in the water. Often several animals play together, their sportive tobogganing being repeated over and over again. The otter displays high intelligence and always has a penchant for boisterous play. When excited in sport it utters a kind of shrill whistle. At other times it may make a yelping bark, a satisfied grunt, or mumble or a threatening snarl, depending upon its various moods.

In the water otters exhibit astonishing ability, swimming and diving beneath the surface with speed equal to or superior to that of many fishes. The principal food is fish and they find it easy to get a living. The fish most preferred by the Sonora otter



were probably the humpback sucker (*Xyrauchen texanus*), the bony-tail (*Gila elegans*), and the Colorado river "squawfish" or "salmon" (*Ptychocheilus lucius*)—all common to the brown silty waters of the river when the otter was plentiful. They catch their food by overtaking and seizing it, the sharp cuspid molar teeth helping them to retain their slippery prey and piercing the tough body scales with ease. The fish generally is held in the forepaws as it is devoured.

In late February, March or April the female makes a nest of grass or tules in a den or hollow of the river bank and there produces three to five young. Three is the usual number.

Otters are closely related to minks and weasels and with the exception of the sea-otter belong to the mammalian genus *Lutra*. Fresh water otters are widely distributed over the earth, in fact no genus of mammals with the exception of some bats have a wider geographical distribution, Australia being the only continent without a representative.

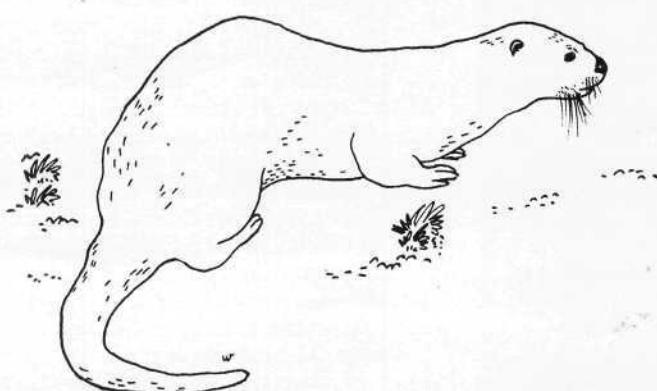
Once plentiful in many of California's inland waters, the otter has gone the way of much of our most valuable wildlife heritage. It is the old story—a fine animal excessively trapped or shot to near extinction. It is to be hoped that the Bureau of Reclamation working with the Fish and Wildlife commission will find somewhere soon the necessary stock to give back to the Colorado's waters the remarkable Sonora otter so that desert dwellers and visitors again can come to know this highly intelligent denizen.

Note the New Address, please . . .



All mail for Desert's editorial and business offices—and Desert Crafts Shops—should in the future be sent to—

PALM DESERT, CALIFORNIA



Utah's Incredible Arch of Stone

A newly completed road makes it possible to reach Delicate Arch in eastern Utah's Arches national monument without all the struggles earlier visitors faced. But Dick and Catherine Freeman are agreed: it was worth the muddy roads, the quicksand and slick rock for a glimpse of the incredible crimson-hued rainbow of stone at the trail's end.

By CATHERINE FREEMAN
Photos by DICK FREEMAN

WHEELS spun and mud flew as the rear end of the government's old Chevy truck settled into a bowl of fine silt "pudding." Our hopes had been high that morning as Custodian Russell Mahan of the Arches national monument told us he was sure he could reach that amazing circlet of stone known as Delicate Arch. Now they sank to our boots.

Ranger Mahan, undaunted by slick mud oozing up over his boot-tops, reassured us. "We'll get her out of here all right," he said. "Bring a lot of that brush, and I'll dig out around the wheels. This is a regular occurrence on these roads," he added, grinning.

Now we understood why he had worn overalls and work boots, and had brought a strong shovel. But it was tough work digging out the mud faster than it oozed in, and pounding the brush down into the holes. Again and again we tried and each time the wheels of the old truck edged forward a few inches and then spun without progress.

"She'll make it next time," Ranger Mahan would say confidently. At last, she really did. With a snort and rattle the car rolled out onto firmer ground. An extended survey of the road and flats beyond brought our hopes to a new low. It was evident the car could never cross the bogs which lay ahead. So we fell to cutting more desert atriplex and artemisia to make a road back over the soupy mud for the car's return.

After that experience we expected Ranger Mahan to tell us we would have to try another day. But he wasn't born an Irishman for nothing. As soon as we were back on solid ground, he proposed another possible route to the arch.

"If we go 15 miles farther around by Thompsons, I'm sure we can make it," he predicted cheerfully. His confidence was infectious and we were hopeful as we bounced away toward Thompsons.

Our driver warned that we hadn't reached the bad place yet. But rolling over a smooth desert road on the higher mesas made it easy to believe nothing could stop us again. Then we saw water on the road ahead. Russell and Dick jumped out to reconnoitre. Before they had returned within hailing distance I knew we would not get through that day. Their shoes, caked

Russell Mahan, Uncle Sam's custodian at Arches national monument greets visitors to his colorful sandstone domain with a friendly welcome.



with mud to the tops, were mute testimony of the condition of the road.

"This'll dry up in a couple of days," said Russell, "and then we'll try it again. Might even be all right tomorrow." Thus ended our first attempt to reach Delicate Arch. It was only a short distance from us, according to the custodian, yet it might as well have been on the moon.

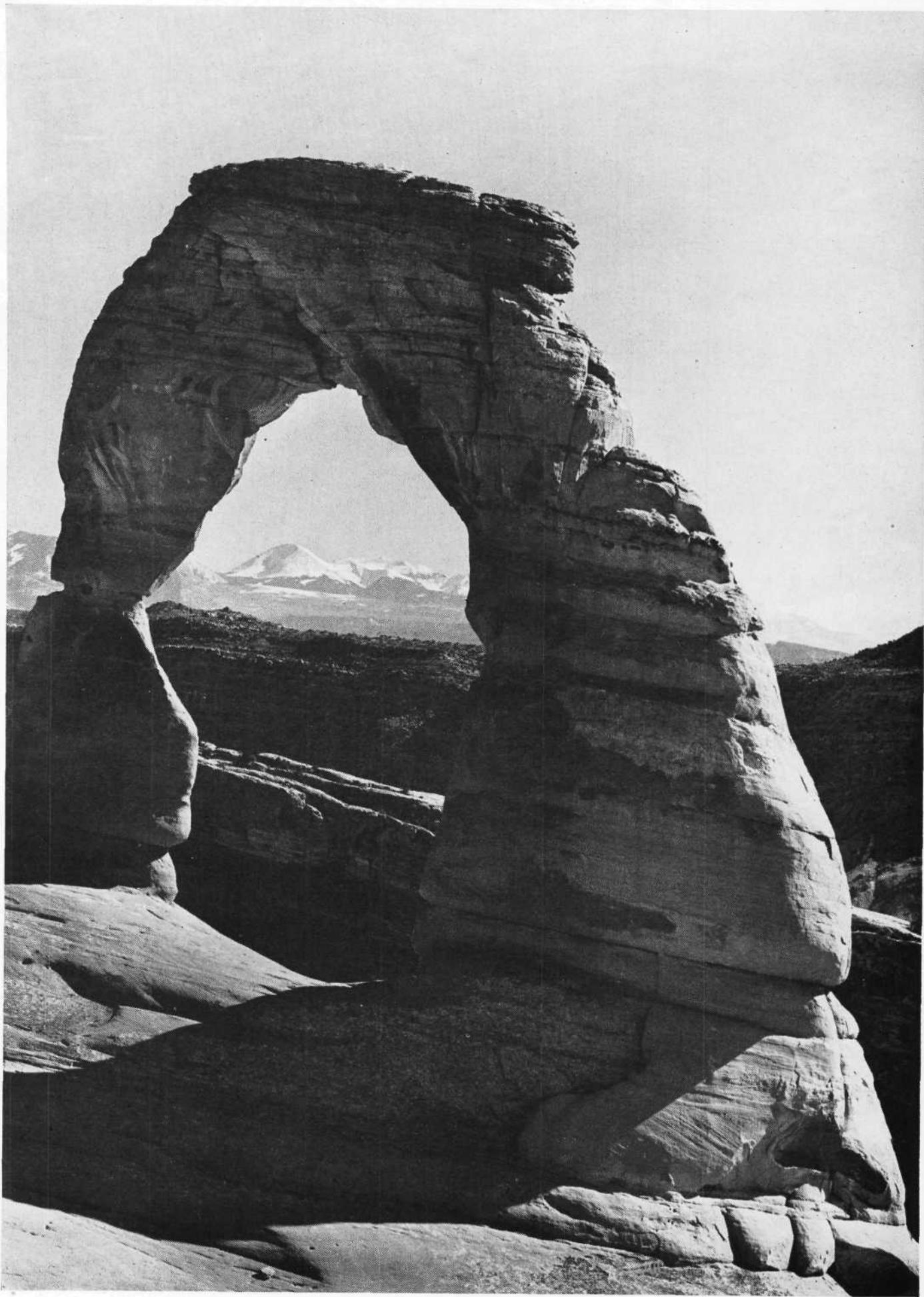
There are 88 known arches in Arches national monument in southeastern Utah. Delicate Arch attracts, perhaps, more attention than any of the others. After one has seen a picture of its graceful contours he feels he must see the original, no matter how difficult it may be to reach.

Two days later we made our second attempt to reach Delicate Arch, and the gods of desert roads were good to us this time. Although the valley route was still deep in mud, we were able to traverse the road from Thompsons without serious difficulty.

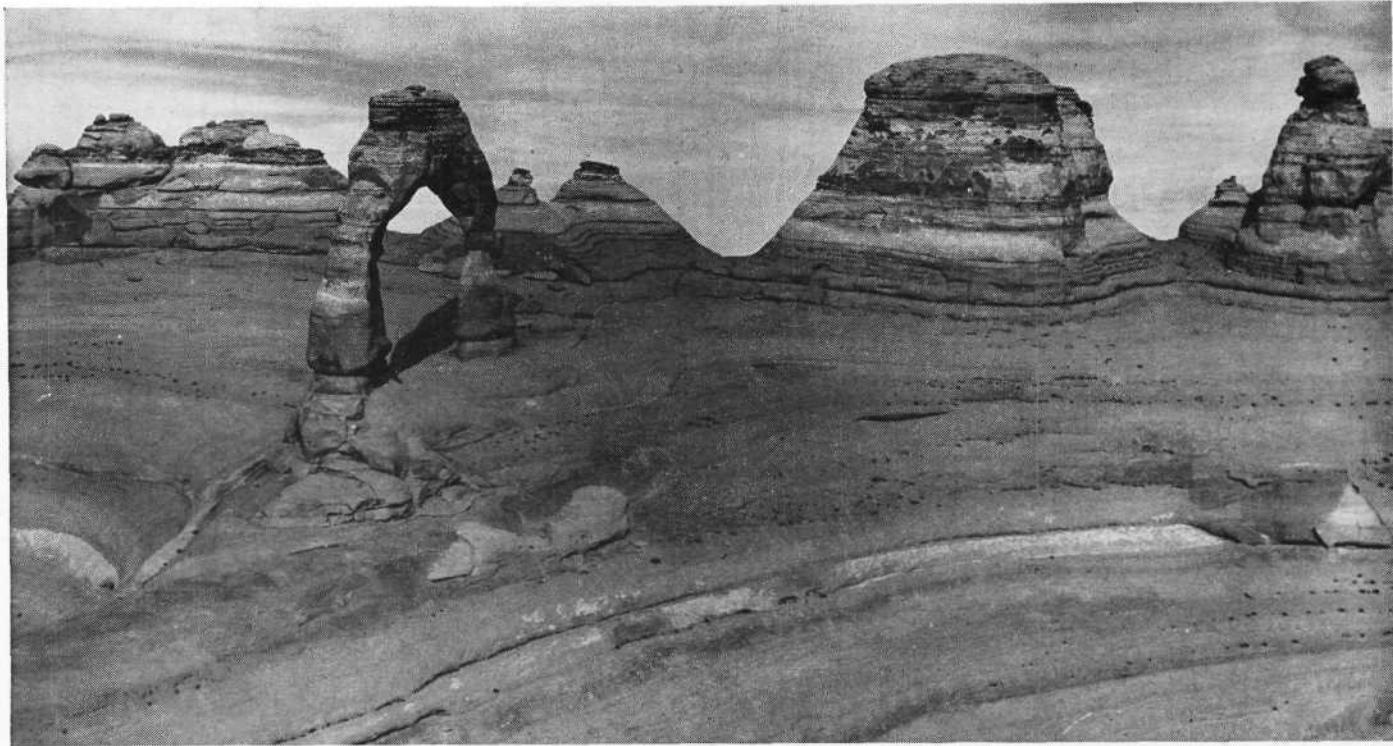
Since that first visit to Arches national monument a passable road has been completed to Delicate Arch, and today visitors to the Monument are able to reach this rare natural "rainbow" without difficulty.

On each side of the road were acres of pinyon and juniper. Hoary old specimens, healthy and strong, they complement the rose-reds of the sandstone with their rich green foliage. Not quite so plentiful, but found in great numbers, was the single-leafed ash, a small tree, but lovely and golden in the fall. As we followed the washes, yellow tamarisks, willows and cottonwoods intensified the brilliance of the sun where just two or three weeks before, orange-hued rabbitbrush had bloomed in profusion.

At last we pulled up beside an ancient weatherbeaten log cabin. The low rather flat roof was covered with small pieces of crushed greenish rock containing copper, and the logs were whitened and grey like pieces of driftwood on the beach. Turnbow cabin had been used, we were told, for over 50 years by sheepmen who came in every winter to pasture their sheep. Located at the end of the road, it had been operated as a source of supplies. All the cowboys and sheepherders for miles around have beaten a shiny trail over the slick rock to its door. The interior, a rendezvous for numerous rodents, is not inviting. But the



This photograph of Delicate Arch was taken in the fall when the La Sals in the background were covered with the first snow of the season.



While Nature has spent countless ages carving Delicate Arch she also has been eroding the bowl in which it is located.

greenish roof and greying sides blend harmoniously with the soft tones of the landscape.

"It's about two miles by trail now. We'll have to watch for quicksand as we cross Salt wash," warned the custodian. "Last week I got into it, and was down to my knees before I knew it. Luckily I had someone with me."

In the salty wash we found pickleweed and coarse grasses through which we pushed our way to higher ground. There we found great outcroppings of rosy agate which in the process of cooling had been cracked so much the stone is not commercially valuable in spite of its beauty.

Russell called our attention to the polished trail we were following on the sandstone. It had been made by the hoofs of the cowboys' horses. We needed no markers to follow it, but we did need wind to keep up with the long legs of the custodian. As we were visualizing mounted cowboys carefully picking their way over these sandstone shoulders, Russell interrupted our thoughts.

"There it is," he called. "Probably you can't see it." We looked uncertainly over the landscape. "Right there," he pointed. "It's end-on and looks like a pillar instead of an arch. We'll get a better view soon."

A final pull over a high sandstone shoulder and a drop into the bowl below brought us within close range of the amazing arch of stone. We wanted to stop and look, but Russell kept us going "for the best viewpoint," he explained.

Delicate Arch is located on the edge of a great sandstone bowl smoothed by the

wind-driven sands of countless years. The trail leads up the edge of this great bowl and as we reached the foot of the arch its smoothness seemed somewhat alarming. Russell and Dick were disappearing around one of the buttresses, their feet clinging to what appeared to be the narrowest kind of an indentation. It is a good idea to wear rubber-soled shoes for this trip.

We cautiously followed Russell Mahan around the rim to where we could look through the slender crescent of stone which is Delicate Arch. Rising from the sandstone ridge it looks like a giant handle by which the bowl might conceivably be lifted. Soft salmon-pink against a bright blue sky, the arch forms an exquisite frame for the snowy 13,000 foot La Sal mountains to the south. This was the view Russell had wanted us to see first, and it was well worth the trouble of carrying heavy cameras and tripod. Dick fairly trembled with excitement as he carefully set up his equipment on the slick rock where one misstep might have been fatal.

Sweeping down 200 feet between him and the arch, the great pink sandstone bowl looked like a huge Indian mortar. Here the wind, carrying sharp crystalline particles, sweeps around like a whirlwind, grinding very, very slowly as a fine lens is ground.

All the great arches in Arches national monument were originally integral parts of huge sandstone ridges, or "fins" as they are called. As wind and sand wear away the softer parts a large block of stone becomes undermined and breaks away from

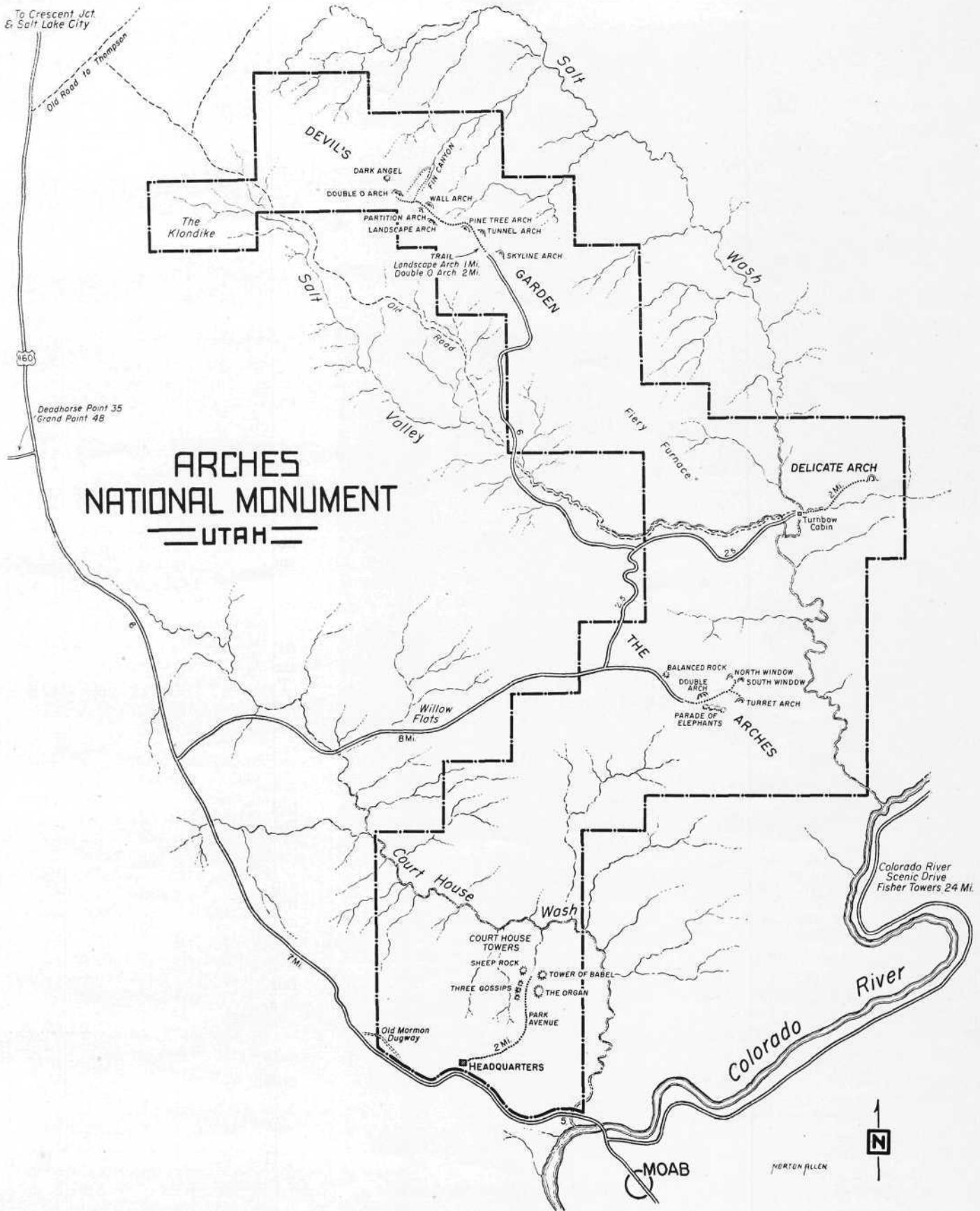
its original position frequently leaving an arch. Then the sand-filled winds smooth of the rough edges, a process which the hardest rock withstands the longest.

So Delicate Arch itself has been left standing, with all the less resistant stone around it eroded away. Sturdily the great bases of the arch cling to the ridge like two firmly placed elephant's feet. Save for one deeply eroded crease on the eastern abutment, the arch looks as if many centuries might pass away before the wind could consummate its destructive work.

As we stood marveling at the incredible structure, Russell Mahan told us how the cowboys of the region used to call it the "Chaps" and at other times the "Schoolmarm's Pants."

"I can see how they got the chaps, but I can't see the other," he said, shaking his head and chuckling. But there wasn't much doubt that, regardless of what it might be called, Delicate Arch is Russell Mahan's pride and joy. His anxiety that we get the best view first, and the pleasure on his face when we showed our appreciation of the exquisite arch made that perfectly clear.

This "delicate" arch is not so dainty in size. As Dick passed between its buttresses, each about 15 feet in diameter, he looked very small beneath its 65-foot height and 85-foot breadth. He was going to take a picture from the side up which we had climbed, where a narrow shoulder extends to the east. He still didn't realize there was a 500-foot sheer drop below him. However, the slick and sloping rock made him exceedingly cautious. Without the rubber-shod tripod legs, he probably could not



This map, recently revised by Custodian Mahan, shows the new roads in the Monument. Double lines are dirt roads subject to weather conditions. Dotted lines are foot trails.



The size of the span may be judged by the figure of Ranger Mahan beneath and beyond the arch.

have secured the pictures and might have lost his camera.

Looking southwest from Delicate Arch in the direction of headquarters, Russell showed us where the new road to Delicate Arch was to be built. Instead of the round-about route toward Thompsons covering 50 miles, this road adds but six miles to the already existing nine mile road into the Windows section.

We had left the wash and the Salt valley road when the vivid colors of sunset began to paint the softening outlines of the cliffs. The snow on the distant La Sals became suffused with a delicate glowing pink melting into lavenders and deep blues as the sun sank, while the cliffs in every direction made a constantly changing pattern of exquisite coloring from the deeper roses to soft mauves and purples.

It seemed no time at all before we reached Moab canyon where a little of the old Mormon dugway, built in 1855 by the

first missionaries, is still visible. U. S. Highway 160 curves down the grade below this old road, passing the monument headquarters just beyond the cliff which formed the barrier those early pioneers had to cross. Our trip to Utah's most extraordinary and lovely arch had become a reality at last and we had had a never-to-be-forgotten glimpse of the spectacular wonders of amazing Arches national monument.

MOST IMPORTANT

By TANYA SOUTH

Have patience, then, and go your way
With love and blessing every day,
And peace and goodwill every night
Toward everyone. For to live right
Is most important of all things,
And nearest unto heaven brings.

Hard Rock Shorty of Death Valley



"Are you Mr. Hard Rock Shorty," asked the stranger who had just arrived at Inferno store.

Shorty looked the visitor over, and noted the brand new levis and boots and Stetson hat. "Yu can jes' call me 'Shorty,'" he replied, after a pause.

"You're just the man I'm looking for—a real old desert rat, if you'll pardon the use of the uncomplimentary term you prospectors apply to each other," the stranger gurgled. "I've always wanted to meet a real desert miner and go on a prospecting trip with him. Of course I'll furnish all the groceries, and I've got a new tent and some canned caviar and a portable radio . . ."

"I guess I ain't the feller you're lookin' fer," Shorty interrupted, and sauntered into the store to share his disgust with the clerk.

"One o' them blasted dudes!" he exploded. "I took one o' them on a trip once. But no more o' that. We set up camp over at Alum spring the first night. Had a sack o' potatoes an' some flour an' coffee—enough for a week, and we left word with Pisgah Bill to bring us another load o' grub in a few days.

"I told the dude to wash the spuds, an' do you know what that blasted tenderfoot did. While I wuz out gatherin' some wood he took that whole sack o' potatoes over and put 'em in the pool below the spring to wash 'em off—sack an' all.

"Fust thing I knewed I heard him over there hollerin' and when I went over t' see what was up there he wuz fishin' around in the water tryin' to find the taters. When he finally brought 'em up that alum water had shrunk 'em up to about the size o' peas in a Bull Durham sack.

"An' all we had to eat for a week wuz sourdough biscuits an' coffee. I ain't got no more time fer dude prospectors."

LETTERS...

Exploring Mexico . . .

Mexico, D. F.

Desert:

No doubt that your readers will be interested in knowing of an exceptional find of oriental blue opal in Mexico.

This opal is of exceptional quality and according to experts is superior to that of the Orient.

The writer visited you in the fall of 1946 just before leaving for Mexico on my exploration trip. Since then, we have found many interesting gem stones. The most exceptional however, is the oriental blue opal.

We have visited old unexplored tombs and buried cities and have collected many beautiful relics. A lot of the material found in the tombs was carved from jade, but there is no known deposit of jade in Mexico. This leads me to believe that the Indians brought jade with them or they had some form of commerce with other tribes who possessed jade deposits.

We talked with a very old Indian who told us that he knew where there was a tomb that contained the remains of giants. The way he described them, they would be 15 or 20 feet in height and some of them according to him, had an eye socket in the center of the forehead. This is very interesting and we hope to make a trip to investigate this rumor this fall after the rainy season. These tombs are in the Terra Caliente and at present it is too hot to attempt any exploration. We are in hopes of interesting some adventurous souls who will be willing to help finance such an expedition. The necessary government authority can be obtained. This exploration would last about three months, and I have no doubt that much data of interest could be uncovered.

T. B. BAIRD

Gold in Volcanic Ore . . .

Canoga Park, California

Desert:

Mr. Eads' letter in June Desert touches a question that I have had in mind for a long time.

It is well established that gold is found in certain types of volcanic rock. Many of the bonanzas of our western states occur in rhyolite and other acidic volcanics, but basalt flows such as those found at the Amboy cinder cone are not generally considered a likely source of gold.

However, a piece of rock the size of one's fist was picked up in the area of lava flows near the eastern edge of the Columbia plateau and on the west side of Coeur d'Alene lake in Idaho about the same time that the Santa Fe agent's daughter made her find at Amboy. It too showed free gold

and assayed over 50,000 dollars per ton. Subsequent search revealed no more, but material from an ash bed near by ran a few cents per ton in gold.

Could it be that basalt flows do contain economic deposits of gold yet to be found?

FRANK B. KELSEY

• • •

Farce of State Inspection . . .

Santa Barbara, California

Desert:

May I add a bit of comment to the discussion of the annoying border inspection to which we are subjected when we cross many of the state lines?

Leaving Santa Barbara for Ajo, Arizona, with some home grown avocados, I was stopped at the Arizona state line and told I could not take them to Ajo. I returned to the nearest California postoffice and mailed them to their destination, with no restraints.

If this inspection really is important, I think they should do a good job of it. If autos and buses are to be inspected, why should the rule not also apply to trains and freight cars?

Moving from Detroit to Santa Barbara I was forced to remove my trunk from the car, and unlock it so the inspector could get his fingers inside. Then he told me to put it back in the car and lock it up. If that same trunk had come through in the freight car with other freight no one would have bothered to open it.

Either this inspection job should be done well, or not at all.

NELSON WHITTEMORE

• • •

Old-timer in the Turtles . . .

San Bernardino, California

Desert:

Mr. Weight's excellent article about the Turtle mountains in your July issue interested me very much, for that range was one of my stamping grounds in the early 'nineties.

The Turtles were by no means unknown even then. We all knew Carson's well as Mesquite springs. Then along came a Kit Carson and behold, he named the spring after himself. He claimed to be a grandson of the original Kit.

Four miles southerly, up high, is Coffin spring where William Hutt and I, along with a Chemehuevi Indian named Hikorum, used to wait for mountain sheep coming down to drink.

Mr. Weight mentioned finding a rock house once built by a Dutch prospector, who later lost his life while unloading machinery elsewhere. Well, that prospector's name was Karl Kirschner. I knew him well. He was about 35, and between trips he would work for wages. He was killed

unloading a car of heavy mining timbers at Amboy, between Needles and Barstow. That was in 1906 or 1907.

CHARLES BATTYE

• • •

More Health and Less Taxes . . .

Agua Caliente Springs, California

Desert:

Perhaps some of your readers would be interested in a current report on these springs, described in your issue of July, 1947, by Marshal South.

This is truly a poor man's paradise—no rent to pay, no taxes, and a complete absence of "No Trespass" signs. Food is our only expense, and while we have to travel to Julian or some distant point for our supplies, our menus are simple and nourishing. We live in tents and house trailers.

We receive mail twice or three times a week. Elevation is 1300 feet. Sun shines every day. Any one suffering from arthritis may remain here until their health improves—and it generally does.

I will be glad to answer any questions from persons wishing to know more about this camp, if they will address me at Julian and send stamped reply envelope.

RICHARD JORDAN

• • •

Friends in the Wild . . .

Santa Cruz, California

Desert:

My husband and I have spent many years prospecting including the Chocolate range and the Mojave desert. Of course we have run across certain odd things.

Last fall we camped on the Kern river about two miles below Isabella. It wasn't long before we discovered we had a robber in camp. One night we turned our flashlight on and found the guilty culprit was a grey fox.

Every night from then on we set a can on a rock with some food in it for him. He was especially fond of anything sweet.

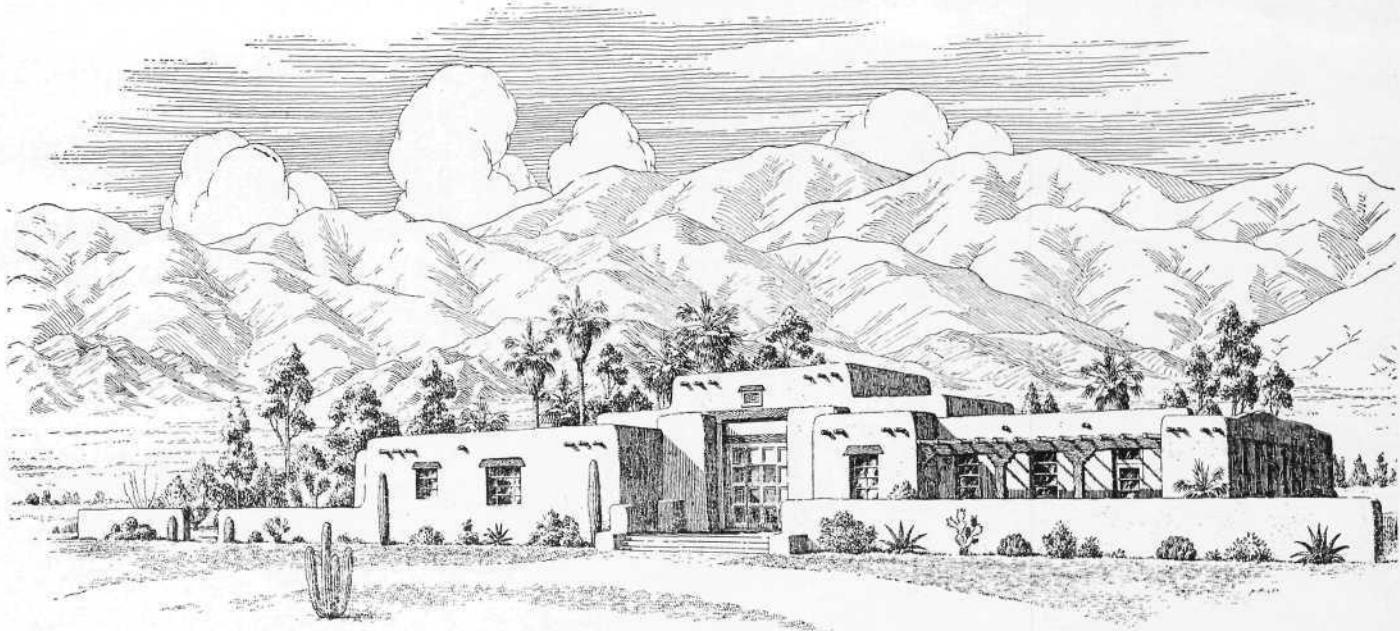
After a couple of weeks he decided not to wait until dark so he showed up at dusk, and finally became so friendly we could throw things to him to eat.

Then one evening he brought his mate. She was timid at first but when she saw he was not afraid she also came into camp. One evening we were waiting for them when up came a civet cat and started eating the food. Then the fox showed up and he did not know what to make of it.

The civet cat saw the fox and raised up on her front paws and began to wave her tail in the air. The fox backed away. Frenchy who lived nearby had brought us a lovely cake that day and we carefully put part of it away for our lunch next day.

During the night the fox got it and we saw the crumbs lying around. That evening we put out the food as usual but this time used two cans. Just after dark here came the two foxes and the civet cat, and believe it or not all three of them dined together.

MARY WILLIAMS



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Mines and Mining . . .

Randsburg, California . . .

Aetna Mines corporation, of Los Angeles, has given Edwin Black a contract to strip five acres of kaolin clay deposit in the Rademacher district north of Randsburg. The contract also called for five miles of road to be opened in anticipation of mining the clay. The road work is completed and stripping, which reportedly will make available 320,000 tons of kaolin is under way. Aetna holds a deposit of abrasive volcanic ash and a gold property in the same area.

Monticello, Utah . . .

The Atomic Energy commission plans to begin receiving uranium ores at its Monticello plant in July and in the Durango, Colorado, plant shortly thereafter. Purchases will be under the commission's announced buying program. Actual processing of the carnotite and roscoelite types of ore for their uranium concentrates will not start until sometime in 1949, when an adequate stock pile has been built up. The receiving stations will be operated by U. S. Smelting and Refining company, while other firms will run the processing plants through contracts with the commission.

Kingman, Arizona . . .

Plans are under consideration to build and operate two, 250-ton custom ore mills in or near Kingman. V. H. Hazen and W. J. Howard, at present operating the Golden Gem mine at Cerbat, are planning the mills. Howard feels that the gunnery range site east of Kingman would be the most desirable location, if arrangements can be made with Mohave county to obtain the Hackberry water which is brought to the airfield in a 16 inch pipe. Howard and Hazen were said to contemplate operation of a small fleet of trucks to bring the ore to the mill.

Monticello, Utah . . .

Drillers for Western Natural Gas company reportedly have brought in a well 40 miles southwest of Monticello which is producing 25,000,000 cubic feet of gas daily. Paul Kayser, president of the El Paso Natural Gas company, which owns a substantial amount of Western Natural Gas company stock, says an application is before the federal power commission to construct a pipe line from the well in the San Juan basin to Needles, California, to connect with Pacific Gas and Electric company at that point so the gas may be used in California. A connecting line to run south from Needles to Blythe also is planned. The company expects to drill 10 wells in the basin, with the idea of delivering 250,000,000 cubic feet to the line each day.

Washington, D. C. . . .

The department of interior has drafted a bill providing for subsidization of mineral exploration up to \$20,000,000 annually, with a limit of \$500,000 to any one producer. Under terms of the proposed law, the secretary of interior would be authorized to contract with private producers for exploration, at locations designated, for critical or strategic minerals or metals. Secretary Krug declared that the Russell mineral incentive bill is too complex and does not guard against shifting of miners from profitable to marginal mining, and the interior department bill was advanced as a substitute.

Reno, Nevada . . .

Blasting has begun on the northeast corner of the campus of the Mackay school of mines in Reno, for a model mine to be excavated there. The John W. Mackay tunnel, as it will be called, will permit students of the school of mines to work under near-real mining conditions. Students graduating from the school this June will be in charge of the work, according to Prof. Jay A. Carpenter, school of mines director. In the mine, students will study timbering methods, the actual employment of mining machinery and tools, and tunneling technique. The tunnel will increase in length with the work of each class.

Hawthorne, Nevada . . .

Broken Hills Mining and Milling company has been incorporated and will maintain offices in Hawthorne. Its property is located at Broken Hills, in northeast Mineral county. According to company officials, a major object in forming the new company is the construction of a milling plant in the vicinity of Gabbs where both water and power are available. Officials estimate ore worth \$240,000 is in sight on the dumps and in the mine. The ore carries high values in silver but has zinc and antimony for which the shippers are penalized at the smelter. James L. Caver of Babbitt is president of the company.

Tecopa, California . . .

The Western Talc mine, 14 miles southeast of Tecopa now is employing 23 men. The vein of talc is 60 feet wide, it was said, and runs for over 6000 feet on the surface. Colman O'Shea, mining engineer and Western Talc company consultant, calls it the largest, highest grade deposit of talc in California. Use of talc in pottery, ceramics and tile is increasing, it was said, until manufacturers are using 60-70 per cent talc to 25-40 per cent clay. The large percentage of talc reportedly gives a finer texture and higher gloss.

Silver Peak, Nevada . . .

The Eureka company has taken a lease on the easterly section of the Nivloc mine at the 700 and 800-foot levels, it is reported. The Nivloc was an important silver producer before war conditions forced its closing. The Eureka company owns the Big Horn extension group of claims adjoining the Nivloc and was said to plan extension of a drift from the Nivloc into its own property. It is reported that the Eureka company plans to erect a mill as soon as ore bodies are developed.

Washington, D. C. . . .

A bill suspending for an additional year the requirement that \$100 worth of work be performed annually on unpatented mining claims, was passed by house and senate in the closing days of the last congress, and signed by President Truman. The bill will be effective until July 1, 1949.

Experimental tests on Nevada oil shales from Elko, Churchill and Eureka counties have been authorized by the U. S. bureau of mines. Tests will be run at the bureau petroleum and oil experiment station, Laramie, Wyoming. If results show further investigation warranted and sufficient quantity can be obtained, the Nevada shales will undergo retorting at the bureau's pilot plant at Rifle, Colorado.

Present plans of Builders Supply of Phoenix, manufacturers of pumice block building material, call for erection of a pumice crushing and grading plant at Williams, Arizona, to supply the market which has developed for the graded raw material.

Late Pre-Cambrian Cross Sections through Southern Nevada, by Dr. Harry E. Wheeler, is the title of the latest bulletin issued by the Nevada state bureau of mines and the Mackay school of mines. Wheeler is a recognized authority upon the Cambrian formation in Nevada. The bulletin will be mailed free to Nevada citizens upon request.

Paul Troester, 80, for many years manager of Segal Mining company of Nevada and superintendent of the Eureka Hill Mining company, died in Salt Lake City May 30.

The 1948 Metal Mining convention exposition of the western division of the American Mining congress will be held in San Francisco the week of September 20.

Floyd Johnson was killed while working in the Eclipse talc mine, 16 miles southwest of Shoshone, when the entire interior of the tunnel collapsed. Forrest Johnson, Floyd's brother, brought aid from Shoshone but when the tunnel was cleared, Floyd was found dead.

HERE AND THERE . . . on the Desert

ARIZONA

In the Dark . . .

PREScott—Two eagles fighting over their supper blacked out half a dozen communities south of Prescott all night June 6. The charred bodies of both birds with the partially eaten remains of a young goat were found in a tangle of copper wire, insulators and charred cross arms at the foot of one of the poles carrying the 44,000-volt power line of the Arizona Power company.

First-Hand Folklore . . .

PATAGONIA—Learning that the University of Arizona was trying to compile a collection of songs and stories of the early Southwest, students of a Patagonia Spanish class conducted by Doris Seibold combed the town seeking information for the folklore committee. The townspeople were so cooperative the students decided to hold a fiesta for all Spanish-speaking people who helped them. More than 300 from surrounding towns and even across the border attended the party which was held in the old opera house. In the collection of folklore sent to the university were poems, lullabys, riddles, superstitions and tales which had been in families for many years.

Desert Boat Club . . .

YUMA—Formation of a Yuma boat club is in progress, and plans are being made for year-around outings and races. Also in the offing is the possibility of staging boat races from the Colorado bridge to the Gulf of Mexico. Upon completion of the Mexican dam at Algodones, sponsors of the club believe the river will prove even more suitable for races and the few hazardous sand bars below the Yuma bridge will be eliminated. Plans include having the river buoyed and completely charted.

He Dived in Montezuma Well . . .

FLAGSTAFF—Herbert L. Charbonneau, former navy diver and now a resident of Flagstaff, has explored the depths of Montezuma well, about 50 miles southwest of Flagstaff. He used homemade diving apparatus and found the depth of the well, once considered bottomless, to average 55 to 60 feet. Charbonneau said that from 35 feet to the bottom of the well he found "millions" of leeches. The diver was accompanied to the well by Dr. Harold S. Colton of the Museum of Northern Arizona, and it is reported the museum will attempt to secure some of the leeches to study their origin and species. Charbonneau remained at the bottom for three hours.

State Indian Education? . . .

PHOENIX—Richard Harless, Arizona representative in congress, has proposed that the federal government grant contracts to the state of Arizona for education of its large Navajo Indian population. Harless says the foremost problem of the Navajo people is education, with the entire framework of the rehabilitation program resting upon it. But the federal government is too far removed from the Navajo to conduct the educational program, he contends, and waste of administrative expenses in Washington would be too great. "Let's spend the money on the Indian instead of the white man," he suggested.

Discovers Frontier Colt . . .

TOMBSTONE—While digging out an old cesspool, Gilbert Lumm discovered a frontier model Colt .45, loaded and complete with holster. The gun was found 15 feet down and with it was unearthed an old pocket watch. Those seeing the gun speculated upon its story, wondering if it was a murder weapon which the killer disposed of or whether it was stolen, then hidden. The violence of life in early Tombstone probably explains why the man burying it never had an opportunity to dig up his cache.

Source of Saguaro Infection . . .

TUCSON—University of Arizona scientists, seeking to halt a disease which threatens to wipe out the giant saguaros, have discovered the source of infection to be a moth which lives only three days, is active only at night, and feeds exclusively upon the tissue of the giant cactus. Dr. Alice Boyle, working for seven years on the problem, solved it by tracing the life

cycle of a grub which is known to carry the bacterial force which is destroying the soft tissue of the saguaro. The bacteria was isolated, identified and named *Erwinia carnegieana* in 1941. But the method by which it was transmitted from one plant to the other was unknown until Dr. Boyle found the grub spends nine months in the larval stage, then develops into the moth. The new knowledge is expected to make effective control work possible.

Apaches Claim Old Reservation . . .

SAN CARLOS—The tribal council of San Carlos Apache Indian reservation reportedly has asked Washington attorneys to determine what encroachment has been made upon their lands and to present claims against the government. The council contends the original treaty with the federal government would extend the present reservation boundaries west to include the Globe-Miami area, south to Mt. Turnbull and the Hayden-Winkleman area, east through the Safford and Duncan valleys to the New Mexico border and north to the Black river, including the Clifton-Morenci districts. The Apaches base their claim on the assumption they were illegally pushed back to their present boundaries and that withdrawals of land from their reservation were made by executive order without authority.

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MISCELLANEOUS

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THE NEW fast moving Photo Color Lamp Shades, now available to dealers in the west. Write for information and price list. Norval Johnson, Western Distributor, 217 North Main St., Lone Pine, Calif.

HOLLYWOOD Postmark. Letters remailed, 25c each, ten for \$2.00, monthly \$5.00. Forwarding, \$3.00 monthly. Arr-Dee, P. O. Box 47, North Hollywood, Calif.

GEOLOGIC & SCENIC color slides for Educational Entertainment. Catalog Free. Heald-Robinson, Dept. 2, 2202 N. Santa Anita Ave., Altadena, California.

GENUINE CALIFORNIA GOLD. Nice piece for only \$1.00 postpaid. Desert Jim, 627 Lillian, Stockton, California.

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INDIAN BOOKS for children. Seven prints, with instructions for coloring, eight pages of interesting text. 35c per copy. Usual discount to dealers and teachers. Eukabi Publishers, 1129 W. 53 St., Los Angeles 37, California.

Winslow, Arizona . . .

Silica sand for use in glass making, furnace casting and for other purposes is being mined just outside the rim of Meteor Crater, 20 miles west of Winslow. A plant for separating the 99 per cent pure silica into various sizes, with a capacity of 18 tons per hour, has been put into operation, according to officials of Meteor Silica corporation, operating the property. At the present time approximately 110 tons per day are being shipped, and contracts are said to call for 50,000 tons of the sand during the next 12 months.

Workers digging for a pipeline in residential Phoenix found a disintegrated skeleton and several pieces of pottery. Archaeologists said the remains might belong to the Hohokam people who disappeared from the Salt River valley about 1200 A. D.

Colonel George Horace Morgan, 93, who won the Congressional Medal of Honor in the Arizona Indian wars, died recently in Washington, D. C. He was cited for action against the Apaches in the battle of Big Dry Wash, 80 miles south of Flagstaff, on July 17, 1882.

Dr. Nelson H. Darton, 82, geologist and cartographer who wrote a report on the geology of Arizona and collaborated on the state geologic map of Arizona, died in Washington, March 5.

A new smelter to cost \$100,000 will be built 38 miles south of Casa Grande, Arizona, to process ore from the Reward mine. Natural gas from the El Paso line will be piped 3½ miles to the mine for smelting purposes.

CALIFORNIA

Another Lost Rockhound . . .

BLYTHE—Conwell T. Smith of Azusa was located from the air in the isolated Wiley's well district southwest of Blythe, after he had wandered without food or water for nearly 24 hours. Smith, returning alone from the Hauser geode beds, became stuck in a wash and collectors who preceded him from the field thought he had remained to do additional hunting. In the Palo Verde hospital, to which he was flown, Smith was reported badly dehydrated. Lt. Hickey of the sheriff's office and Police Chief Herman Disch of Blythe ask that anyone planning a trip into this area inform sheriff's office or police station as to their destination and estimated time of return. Upon return, the party should notify authorities to eliminate possibility of needless search.

Niland-Blythe Road Inspected . . .

NILAND — The proposed Blythe-Niland Four-States highway link, which would bring Imperial Valley 100 miles closer to Blythe and the Arizona country, was inspected in May by road commissioners from Riverside, Imperial and San Diego counties. A 42-mile stretch between Niland in Imperial county and Blythe in Riverside county is unimproved. If paved, it would connect with Highway 60 between Blythe and Desert Center and complete an all-weather paved road from Canada to Mexico. Vaughn Wood, Imperial county road commissioner, said San Diego favored the project but Riverside has not committed itself. The navy reportedly is seeking to have the highway, which marks the boundary of one of its war-time aerial gunnery ranges, discontinued permanently.

ANSWERS TO TRUE OR FALSE

Questions are on page 17

- 1—False. Mirages appear both summer and winter.
- 2—False. Rainbow Bridge national monument is in Utah.
- 3—True. 4—True. 5—True.
- 6—False. Creosote is common in the below-sea-level Imperial Valley, also in Death Valley.
- 7—False. Pictographs are painted on the rocks, petroglyphs are incised in the rocks.
- 8—True.
- 9—False. Chuckawalla has no venom.
- 10—False. Billy the Kid was killed by Sheriff Pat Garret.
- 11—False. Death Valley's first white visitors found a few Indians living there.
- 12—True. 13—True. 14—True.
- 15—False. The capital of New Mexico is Santa Fe.
- 16—True. 17—True.
- 18—False. Malachite is a copper ore.
- 19—True.
- 20—False. Beaver along the Colorado became virtually extinct during the early trapping days. They are slowly returning, but have legal protection.

Will Salton Sea and Gulf Meet? . . .

PALM SPRINGS—Tidal bores are eating great chunks of land from the northern end of the gulf of California, according to Lloyd Mason Smith, director of Palm Springs Desert museum, and if the process goes unchecked Coachella and Imperial Valleys will one day be under water. Before dams harnessed the Colorado, Smith says, the river deposited huge amounts of silt at its mouth and the tidal bore could not keep up with these deposits. But the river no longer carries so much silt and the bore is making steady progress toward the Mexico-California border. If it reaches the border, Smith declares it will submerge Brawley, El Centro, Indio, Coachella, Mecca and Thermal, and put Palm Springs on the beach.

Starts Flower Collection . . .

INYOKERN—NOTS Museum of Natural Desert History has started on a project to make a permanent and classified display of desert plants, and Darwin Tiemann, curator, is asking for volunteer assistance. Tiemann has started a file of portfolios, 13 by 18 inches and to date 50 flowering plants have been pressed and glued to the pages of the portfolios. Last year 3236 persons visited the museum, located on Burroughs school grounds. Visitors are welcome and specimens of local plant and animal life will be appreciated by the curator.

Baja California Roads . . .

CALEXICO—Official Mexican sources report a proposed Mexicali-Tijuana road which will go south along the coastline and cut across the mountains to San Felipe on the Gulf of California. The proposal includes a network of crossroads which

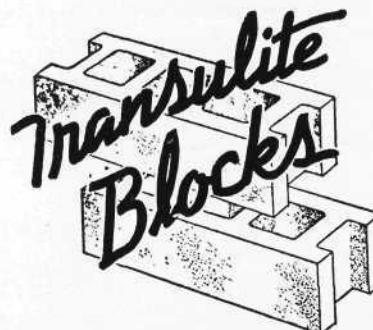
will open the interior. On the Mexicali-San Luis highway, 15 miles now are open to travel, of which 10 have been paved. Progress on the Mexicali-San Felipe highway is reported rapid, with 85 of the 125 miles open to travel and 60 miles paved. Completion of the road, which may take place this year, will bring the waters of the gulf within three hours by auto from Calixco.

Pinto Culture Site Explored . . .

LITTLE LAKE—Ruins of an ancient settlement near Little Lake are being investigated by the Southwest Museum. Mark R. Harrington, museum curator in charge of the expedition, declares that the new find is the first discovery of Pinto culture artifacts in their original site. The village was believed to have been inhabited from 3000 to 15,000 years ago when the now-arid desert was a green and moist land.

Death Valley Freighter Dies . . .

BIG PINE—Frank Tilton, one of the last surviving drivers of the 20-mule teams and huge borax wagons which once rolled from Death Valley to Daggett, died in Big Pine on June 7, age 86, after a broken hip had hospitalized him for several years. He went to work for the Pacific Coast Borax company in 1890, and drove 20-mule teams from Borate in the Calicos and from Death Valley. Tilton also freighted supplies to Greenland ranch, the forerunner of present Furnace Creek ranch, when Jimmy Dayton was in charge there for the Borax company. Tilton and Dolph Navares were the two who braved the summer heat to find and bury Jimmy after he perished in Death Valley.



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Navy Wants More Land . . .

EL CENTRO—The county board of supervisors has deferred action on a Navy request that all county roads into the Chocolate mountains area claimed as a navy gunnery range be discontinued. Although Camp Dunlop has been declared surplus and the buildings there demolished, the Navy declared it was reposting the Dun-

lop aerial gunnery range within the next 30 days. Vaughn Wood, county road commissioner, said there were nearly 40 miles of county road there and the closing of the roads would cost the county \$20,000 in gasoline tax money. Some board members felt that the navy can consolidate its gunnery range so it will not interfere with the proposed Four-States, Niland-Blythe highway.

NEVADA

Davis Dam Progresses . . .

DAVIS DAM—Construction on the \$77,000,000 Davis dam, 67 miles below Hoover dam, has reached the half way mark, and the Colorado river will be diverted around the dam site in the near future, according to the bureau of reclamation. This will mark the fourth time man has taken the Colorado out of its natural channel. At Hoover and Parker, diversion was accomplished through tunnels driven through the rock and at Headgate Rock dam, an Indian service project, it was diverted through an open channel. At Davis dam, the river's new route will be through a 4500-foot ditch, part of which is excavated to a depth of 200 feet in solid rock. To change the course of the river, draglines will remove earth plugs in the diversion channel and huge trucks will dump rock from a trestle across the river until the old course is blocked off.

Development for Nevada Park . . .

LAS VEGAS—Negotiations are under way to bring southern Nevada's scenic Valley of Fire under the national park service for development. At present the state owns a strip of land sections bordering the valley on the west and south while the federal government owns nine townships which include the major scenic portions. The state owns the secondary road from Crystal, on Highway 91, to the eastern boundary and the park service owns the road from Overton Landing to the eastern boundary. The state plans to transfer its land to the United States government in exchange for other federal lands in Nevada. The national park service has proposed that when transfer is complete, the 34,000 acre Valley of Fire scenic section be added to the Lake Mead recreational area.

Gold at Death Valley Castle? . . .

BEATTY—Death Valley Scotty is back in the news with the story of a secret cache of \$250,000 in gold dust which he believes his partner, the late Albert M. Johnson, hid somewhere in the vicinity of the famous Death Valley Castle. Scotty says that two years ago Johnson made a trip to his ranch, located a few miles from the castle, and produced bags of almost pure gold dust which totaled 7533 ounces when weighed by the two men. Scotty could not say where the gold came from but when the hoard was not mentioned in Johnson's will, he started to search for it. Par-

tial confirmation of the story came from Mr. and Mrs. Henry Ringe, managers of the castle, who told of a conversation with Johnson during which he expressed concern over disposal of the gold.

Pay Dirt at Museum . . .

CARSON CITY—The *Nevada Appeal* believes officials of the Nevada state museum might well abandon their model mine project in the basement of the museum and switch over to actual mining operations. The museum is in the old U. S. mint building in Carson City, and dirt taken from beneath the stone structure has assayed nearly \$100 a ton, gold and silver. J. E. Green, museum director says that W. M. Donovan, Silver City, tested the ground and reported \$66.50 in gold and \$27.09 in silver. Green believes the dirt became "salted" with gold and silver dust through the floor while the mint was in operation.

Up the Colorado . . .

BOULDER CITY—Four men—a Mr. Hudson and his son Edward of Paso Robles and Otis Marston and Willie Taylor of Berkeley—were to attempt to run the Colorado river from Lake Mead upstream to Lee's Ferry in June in a 19-foot cruiser, Esmeralda II, powered with a 75 h.p. marine engine. In 1944 Hudson attempted the voyage, but low water blocked

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the effort. This June a stage of 70,000 to 80,000 second-feet, higher than when any previous boat trip has been made on the river, is expected. Twenty days were allotted for the 345 mile trip and gasoline was cached by pack train and Indian packers at the head of Lake Mead, Diamond creek, Havasu creek and Grand Canyon.

It Buzzed, He Jumped . . .

TONOPAH—Listing the dangers a man alone on the desert faces, the Tonopah *Times-Bonanza* tells the story of E. M. Booth. Booth was standing beside a big rock peering down into a 10-foot hole in the Reveille country, when a rattlesnake sounded off behind him. Booth looked around, saw the snake within 18 inches of his back, coiled and starting to strike. The man spread his wings and soared over the 10-foot hole. It might have been a 30 or 40-foot hole, Booth says. He would have jumped anyhow. He barely made it to the other side. Had he fallen in that or a deeper hole, he might never have gotten out.

NEW MEXICO

Zuñi Can Vote . . .

GALLUP—Mason Harker, Zuñi Indian, became a registered voter in McKinley county by presentation to the county clerk of receipts for taxes paid on land he owns in Valencia county south of the reservation. A district court ruling by Judge David Chavez last year held New Mexico Indians were eligible to register and vote if they paid an ad valorem tax on real property.

Change Ceremonial Program . . .

GALLUP—Changes in the Inter-Tribal Indian ceremonial programs for this year were decided upon by directors of the show at a meeting in May. All ceremonial dances are to be eliminated from afternoon programs, which will consist entirely of rodeo events, sports and special features. Night programs will be devoted to ceremonial dances. Directors believe that many visitors who have seen an afternoon performance and who have gone away with mistaken ideas about the ceremonials will now remain for the night show, which is the highlight of the program. The Inter-Tribal ceremonials will be held August 19-22 this year.

Aztec Monument Expanded . . .

AZTEC—President Truman has added a 1225-acre tract of land to Aztec Ruins national monument here. The land, which the president's proclamation said contains ruins of unusual scientific value, was donated to the United States by the Southwestern Monuments association. The original monument contains a large E-shaped pueblo ruin, with approximately 500 rooms, dating to about 1100 A. D.

Big Pinyon Crop Predicted . . .

GALLUP—The 1948 pinyon nut crop will be the heaviest in years, according to reports from Zuñi and Navajo Indians. A group of Zuñis displayed heavily laden branches in Gallup in May and said the harvest to the south would be good. Navajo report the trees on the Ganado ridge loaded with cones. The cones in May were about the size of walnuts. Each one carried many pinyon nuts which are freed with the first heavy frost in the fall. The nuts are an important cash crop for the Indians.

Is Billy the Kid Alive? . . .

CARLSBAD—Billy the Kid has been in Mexico since his supposed death in 1881 instead of lying in a grave at Fort Sumner, according to J. W. Weldy, 83, of Carlsbad. Weldy claims he talked with Billy in a Las Cruces drygoods store four years ago. Weldy says Billy became suspicious while on the way to the Maxwell house where history declares he was shot

to death by Sheriff Pat Garrett on the night of July 14, 1881. The Kid kept on riding and reached Mexico where he married and went into cattle ranching. The man who was shot to death at Fort Sumner, according to Weldy, was a spy for a cattle baron.

Taos Artist Honored . . .

SANTA FE—An exhibition of the life work of Ernest L. Blumenschein, noted Taos artist, opened at the Museum of New Mexico gallery late in May. The exhibit commemorates the 50th anniversary of the founding of the Taos art colony by Blumenschein and Bert Phillips in 1898. At the opening of the show, Blumenschein was to be awarded an honorary art fellowship of the School of American Research.

Social Security for Indians . . .

ALBUQUERQUE—Reservation Indians can apply for assistance under the social security act now, Eric T. Hagberg, United Pueblo agency superintendent, no-

THREE MILLION DOLLAR POWER BUSINESS

IMPERIAL IRRIGATION DISTRICT'S POWER REVENUE FOR 1947 TOTALLED MORE THAN THREE MILLION DOLLARS.

TOTAL NET POWER SALES for 1947 was \$3,057,296.33—an increase of \$370,000.00 over the sales of the previous year. MORE IMPORTANT is the total of \$1,133,364.71 in NET REVENUE as compared with the 1946 TOTAL OF \$932,744.28—A GAIN of \$200,620.43.

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tified Pueblo governors in May. Those eligible are needy persons over 65, physically disabled persons and needy children. Plans call for the public welfare department to pass on the applications and Indian agencies concerned to pay the allowances. Hagberg said, however, that the agency had less than \$500 to use on such cases until the end of the fiscal year, June 30, 1948.

• • •
UTAH

Inventory Pioneer Material . . .

SALT LAKE CITY—The state central company of the Daughters of Utah pioneers has completed inventory and filing of thousands of pioneer journals, biographies and related historical material. Mrs. Kate B. Carter, president, directed volunteer workers in the project, which was preliminary to publication of a catalogue. The collection includes 20,000 pioneer biographies, 1700 Bibles, documents signed by Brigham Young, Joseph Smith and other Mormon church and territorial leaders. Important new source materials were said to have been uncovered and made accessible to researchers through the inventory.

River Adventurers . . .

BLUFF—The Explorers Scout group of Encinitas, California, started an expedition down the San Juan and Colorado rivers from Bluff to Lee's Ferry, Arizona, June 14, with Harry Aleson in charge. The Scouts, guests of Charles W. Larrabee of Encinitas, were to visit many attractions along the river, including Rainbow bridge. From Moab came the report that Mr. and Mrs. Preston Walker of Grand Junction, Colorado, and Otis and Margaret Marston of Berkeley, California, had completed the first boat trip down the Dolores river from near its source to its junction with the Colorado. The voyage was made in a cataract-type boat built by Norman Nevills and the Dolores was declared to be more turbulent than the Colorado and Snake rivers. A voyage on the Green from Lily Park, 75 miles above Jensen, was less successful. Near Island Park, the rubber raft struck a rock in swift water and all four occupants were thrown into 12 foot waves. Arnold Kidd, Harold Twitchell and Erwin Day managed to reach the river bank, although scattered out for three miles. But, at last report, Everett Billings had not been heard from. The life preserver he was be-

lieved to have been wearing was recovered three miles down the stream near the mouth of Green river gorge.

Will Open Aneth Indian School . . .

BLUFF—Two quonset huts for dormitories at the Indian service school at Aneth, 20 miles east of Bluff, will be built this summer under supervision of the American Friends (Quaker) service committee. The committee is sponsoring a nine-week work camp for about 25 college students at Aneth, and the school building, vacant for six years, will be put into condition for use this fall. A Hopi Indian will be job foreman. The society sponsors the work camps to provide service for people of a locality and to give the students first hand information on conditions in other parts of the country. The Indian service will board students at the reopened Aneth school, and the state of Utah will pay the teachers.

It's Their Reservation . . .

BLANDING—The state of Utah has 50,000 acres of land down in San Juan county—but the Navajo won't admit it. The land is spotted in sections through the western Navajo reservation. The Navajo know the general boundaries of their arid land, including San Juan river on the north, and when a lessee of state land attempts to reach his property, state officials report, the Indians promptly run him out. They refuse to believe that any land within the reservation boundaries belongs to anyone else. J. Fred Pingree, Utah land board commissioner, says that unsuccessful attempts have been made to trade the 50,000 acres for federal land—or the use of federal land—outside the reservation.

Jeep Reaches Escalante Crossing . . .

ESCALANTE—What is claimed to be the first trip by automobile to the Crossing of the Fathers on the Colorado river near the Arizona border has been made by Jack Breed, photographer, and ten companions. Two vehicles, a jeep and a four-wheel drive half-ton truck made the trailless overland trip to the rim of Glen canyon, the drivers fighting the vehicles through miles of sand dunes, down slick rock, through canyons and over ledges. Burnet Hendrix, Panguitch, drove the jeep and Rollie Allen, Panguitch, the truck. The Crossing of the Fathers is the ford used by Padre Escalante and Dominguez in their explorations in 1776.

Green River Bridge Opened . . .

GREENRIVER—The new bridge across Green river, located at Greenriver, Emery county, has been opened to all traffic, including heavy trucks. The bridge is 600 feet long, of reinforced concrete and steel. Work on the structure started 20 months ago when an overloaded truck collapsed the old bridge.

• • •
Mrs. Ruby Pratt Beesley, 74, daughter of Orson Pratt, apostle of the Mormon church, died in Salt Lake City, April 22.

WIN IN DESERT'S PHOTO CONTEST

It's a little warm on the low deserts of the Southwest—but there is no limitation on subject matter for Desert's monthly photo contest, so long as the picture is essentially of the desert. Photos of the Grand Canyon's cool North Rim, the Indians and their plateau country, the high deserts of Nevada, the beautiful land of Utah, the mountains of New Mexico—all have a chance for prize money and for the recognition of photographs reproduced in Desert Magazine.

Entries for this month's contest must be in the Desert Magazine office, Palm Desert, California, by August 20 and winning prints will appear in the October issue. First prize is \$10; second prize, \$5. For non-winning pictures accepted for publication, \$3 each will be paid. Entries which arrive too late for one month's contest are entered in the next.

HERE ARE THE RULES

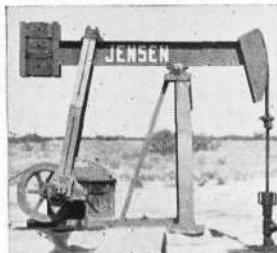
- 1—Prints for monthly contests must be black and white, 5x7 or larger, printed on glossy paper.
- 2—Each photograph submitted should be fully labeled as to subject, time and place. Also technical data: camera, shutter speed, hour of day, etc.
- 3—PRINTS WILL BE RETURNED ONLY WHEN RETURN POSTAGE IS ENCLOSED.
- 4—All entries must be in the Desert Magazine office by the 20th of the contest month.
- 5—Contests are open to both amateur and professional photographers. Desert Magazine requires first publication rights only of prize winning pictures.
- 6—Time and place of photograph are immaterial, except that it must be from the desert Southwest.
- 7—Judges will be selected from Desert's editorial staff, and awards will be made immediately after the close of the contest each month.

ADDRESS ALL ENTRIES TO PHOTO EDITOR, DESERT MAGAZINE.

THE *Desert* MAGAZINE
PALM DESERT, CALIFORNIA

Navajo Farm Workers Chosen . . .

FARMINGTON — Navajo Indians working on farms in Davis county proved so satisfactory last year that the county farm labor association has canceled requests for Mexican nationals and will rely entirely on Indian labor this year. The first group to reach the area, 32 students from the Indian school at Shiprock, New Mexico, were housed in barracks moved from Hill field to the sugar factory near Layton. Mrs. Nettie Nick, employed by the government at the Shiprock school, is in charge of the barracks and does the cooking with the assistance of two girls, selected in rotation from the group. Farmers show up at the barracks in the morning, request a certain number of workers and take those assigned to their farm for the day. All the students speak English, but other family groups arriving in the county do not know any language except Navajo.



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UTAH DREAM HOME FOR SALE

Refer to July, 1943, Desert Magazine for article and pictures by Charles Kelly. Known as Pleasant Creek ranch, located 24 miles southeast of Torrey, Utah, in the heart of Capitol Reef National Monument, Wayne Wonderland, Wayne county, Utah.

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Pleasant Creek Ranch, TORREY, UTAH

Wild Horses Vanishing . . .

SALT LAKE CITY—C. L. Forsling, grazing director, estimates there were 100,000 wild horses on federal range in the fall of 1942. In March, 1943, an order was issued closing federal grazing districts in the 10 western states to wild horses as a war measure to preserve fodder for cattle and sheep. During 1943, 25,273 wild horses were removed and destroyed. By June 30, 1944, the bag had reached 77,163. The big roundup was said to be continuing, while the remainder of the herds are retiring to the wild country where the breaks of deep-cut rivers cross mountainous desert land.

Land Transfer Approved . . .

SALT LAKE CITY—Congress has approved a bill to permit states or cities to buy surplus federal land for parks and recreational areas. The land, mostly unneeded military reservations, would be sold at half of fair value. It may be transferred without charge for use as historical monuments if the size of the area is approved by the national parks commission. Separate bills to transfer a number of former military posts, including Fort Douglas at Salt Lake City, to public agencies have been delayed until agreement was reached on the bill.

A new map of part of the Colorado river and its tributaries in Utah and Colorado is reportedly available for purchase from the U. S. Geological Survey, Washington, D. C.

The army intends to hold its bombing base at Wendover in western Utah, according to Representative William A. Dawson.

A 14-foot mirror owned by Clara Decker Young, wife of Brigham Young, has been added to the historical exhibit of the Central Company, Daughters of Utah Pioneers, in Salt Lake. Despite a trip across the plains by ox-team, the mirror is perfect, except for a small crack in the lower right hand corner.

Whiterocks trading post, a Uintah basin landmark, has been sold by Robert L. Marimon, Jr., to Lawrence E. and Harold M. Phillips. Marimon had been trader at the post for 18 years and the Marimon family had operated the post since 1902, except for a three year period.

President Truman has signed the Watkins-Dawson bill authorizing the Bureau of Reclamation to expedite completion of the Deer Creek irrigation project and the Salt Lake aqueduct.

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Inyo County, \$15; E or W 1/2 \$7.50; San Bernardino, 73x110, \$15; No. or So. 1/2 \$7.50; NW., SW., NE., or SE 1/4, \$3.75.

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By LELANDE QUICK, Editor of The Lapidary Journal

Once again we offer an interesting communication from Harold Odle of Rollins, Montana. He writes: "Recently you referred to a fellow who used a one-horsepower gasoline engine to run his machinery. I learned faceting with an old Evinrude outboard motor hooked up with a belt wheel on a propeller shaft with quite an elaborate system of hoses and tanks to circulate water. I didn't waste water as every drop had to be hauled in barrels from the lake. Later I bought a second-hand Fairbanks-Morse one-and-a-half-horsepower stationary engine and ran that faceting machine, cabochon outfit, lathe, planer, bench saw, jig saw and saw gumming wheels with a length of 3/4" pipe for a line shaft. Of course I didn't run all these at once but then I couldn't be at all of them at one time either. The gas engine was actually much lower in running cost than the electric motors I now use, but not so handy. Now I have individual motors on every tool except the saws which are on a line shaft. I run three saws with a half-horsepower motor.

"In regard to lapidary speeds, much could be written and still not much said, but in the main you are right. Grinding wheels should always be run at the correct speed of 6600 surface feet per minute. Sanders are almost always run too slow. We have been running a series of sanders as high as 4500 r.p.m. with no more heat trouble than at slower speeds as the touch is lighter at higher speeds. The higher the sanding speed the better the finish but be sure your equipment can take it and still be safe. A disintegrating wheel at high speed is about as so liable as a hand grenade in a glass factory."

These columns have contained information in the last year about substitutes for motors, so anyone in the desert regions without electric power should be able to build himself a gem cutting outfit that will be as efficient as anything run by electricity. We mentioned some time back about the Savonius type windmill and we promised several interested correspondents that we would run an article about it. Investigation however indicates that an article several pages in length would not do justice to the subject. It was the Savonius principle that powered the sensational rotor ships some years ago. A modern adaption of the principle can be observed in the S type advertising signs that revolve with the wind. To explain the building of a Savonius windmill involves higher engineering, but almost anyone mechanically inclined enough to build his own lapidary outfit should not long be puzzled by the problem of harnessing the wind for his use. And besides, there is never any wind in the desert. (?)

As for grinding speeds, we always hesitate to offer advice, for what is one man's meat is another man's cracked cabochon. We do think that amateurs particularly should not be greatly concerned about speeds but be guided by the recommended speeds printed on the wheels by the manufacturers. If one is used to machine shop practices and wants to mount wheels di-

rectly on the motor shaft one should do so. But by and large the whole subject of speeds is confusing to the amateur and some folks attempt to make the whole thing far too complicated. Grinding gems is not difficult. Let the amateur buy a good arbor and run the wheels on a quarter-horsepower motor; grinding at the motor speed (usually 1750 r.p.m.), sanding a little slower and polishing at about half motor speed and he won't go wrong. Besides that, he will be playing safe with himself as well as with his cabochons.

When one becomes fairly skilled in cutting and polishing, and time means more to him, the experimenting with higher speeds is interesting. However the amateur cuts for fun and a few more minutes spent in finishing a gem should be of no consequence when he is not on a production line basis.

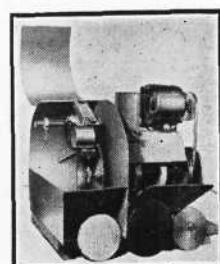
When it comes to saws—well, one could write a book, but who wants to read a book on sawing? There are saws which cut through a rock almost before you touch the rock to the saw blade. Others take long, long time. Some people run them slow to "save" the blade while others run the blade fast so that it doesn't stay in the rock so long and "wear out so fast." Something like the lady arrested for speeding who gave as her excuse that she was speeding to a service station because she was running out of gas. A good rule and a safe rule is to saw and polish at about 500 r.p.m., sand at 1000 and grind at about 1800 and quit worrying about it.

We are happy to report that the first convention of the American Federation of Mineralogical Societies featured a great amount of excellent lapidary and jewelry work. Mr. Unruh's miniatures were the best we have ever seen and Mr. Renton's cabochons won us because we like big cabochons and he does them that way. Mrs. Lloyd Roberson's jewelry equalled the finest we have ever seen and it was displayed in such a unique manner that one could not fail to linger for more than a casual glance. It invited study.

Richard Pearl, well known author on gem and mineral subjects, was elected president of the Federation. Mr. Pearl is the only man in our memory who ever wrote and dedicated a book to his mother-in-law. She must be a gem, and no pun is intended. Mr. Pearl's new book is *Popular Gemology* and we discussed it last month. It is receiving wide acceptance for it presents the subject of gemology (not gem cutting) in a highly interesting manner.

The federation convention was not a big meeting. It may have seemed so to many in attendance, for it was certainly crowded. As a matter of fact, only about 1100 persons registered whereas the San Jose Lapidary society registered 4968 persons recently at a non-commercial, strictly lapidary show in a much smaller community. The California Federation show at Long Beach will be in progress as this appears and we shall be greatly chagrined indeed if people do not visit it at the rate of 1000 an hour.

This page of Desert Magazine is for those who have, or aspire to have, their own gem cutting and polishing equipment. Lelande Quick, who edits "The Lapidary Journal," will be glad to answer all questions in connection with your lapidary work. And he would like details about new short cuts or devices which lapidary workers have discovered, to pass on to readers. Queries and information should be addressed to Desert Magazine, Palm Desert, California.



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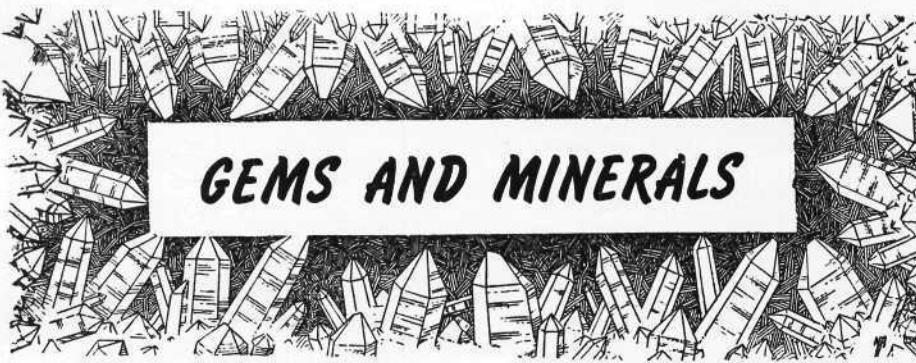
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GEMS AND MINERALS



GRAND JUNCTION HOLDS GEM, MINERAL EXHIBIT

Grand Junction Mineralogical society of Colorado held a gem and mineral exhibit in Lincoln park auditorium, May 2-4. Rocky Mountain federation ribbons were awarded as follows: minerals, first, Lee Worley; second, group collection from Fruita; third, Mrs. Richard Fischer. Polished stones, excellence of workmanship: first, Warren Bush; second, E. B. Freeman; third, L. O. Gray. Polished stones, quality of material: first, Harold Tillinghast; second, Mrs. Preston Walker; third, George A. Bradley. General: first, George Bradley; second, J. F. Peck; third, J. E. Stump. Miscellaneous: first, C. B. Pond; second, L. O. Gray; third, Mrs. Preston Walker. The show was held in conjunction with meetings and art displays of the Woman's club of Grand Junction.

SECOND PHOENIX GEM SOCIETY ORGANIZED

Maricopa Lapidary society, a new rock club in Phoenix, Arizona, meets the second Monday of each month at 1736 West Van Buren street, in the assembly hall at 7:30 p. m. Club officers are: Ray Fiest, president; R. I. Hart, vice-president; Olive Miller, 3627 East Van Buren street, secretary; Thora Rollins, treasurer; E. P. Matteson, mineral sales and display chairman; Mrs. E. P. Matteson, entertainment chairman; Orville Sanderson, field trip chairman. Fifty persons were present at the first election. The club constitution limits membership to that number, but so many requests for membership have been received that the limit may be lifted to 100. Visitors are welcome and information may be obtained from Mrs. Matteson, phone 5-5517.

NEW ROCK CLUB FORMED IN CASTRO VALLEY

Eden Mineral and Gem society was formed at a meeting held June 5, 1948, at the home of Mr. and Mrs. B. E. Sledge, 8679 Castro Valley boulevard, Castro Valley, California. Officers of the new organization are: president, Col. C. B. Branson; vice-president, B. A. Breeden; secretary, Mrs. Frances Taylor; treasurer, Mrs. May Meyers; director, three years, D. P. Phillips; director, two years, L. O. Taylor; director, one year, T. P. Robb. Mrs. Anita M. Phillips, 20700 Lake Chabot road, Hayward, California, is corresponding secretary and B. E. Sledge will serve with the executive committee as immediate past-president. Purpose of the society is to further interest in and knowledge of minerals and lapidary work.

MIDWEST FEDERATION MEETS IN CHICAGO, AUGUST 21-23

The annual convention of the Midwest Federation of Geological societies will be held at the Chicago Natural History museum, August 21-23. Field trips planned will include a visit to the Pennsylvania floral fossils and to interesting spots and collections in the Chicago area.

ALBUQUERQUE SITE FOR 1949 ROCKY MOUNTAIN SHOW

Albuquerque, New Mexico, was chosen for the 1949 convention of the Rocky Mountain Federation of Mineralogical societies, at the annual meeting held June 15 in Denver. Guy M. Shockley, of the Albuquerque Gem and Mineral club was elected president of the federation for 1948-49. Retiring president was Chester R. Howard.

• • •

Chester Howard reports in *Mineral and Gem News of the Rocky Mountains*, which he edits, that the Historical Record Book of the Rocky Mountain Federation has recently traveled to the El Paso Gem and Mineral society and the Dona Ana County Rockhound club in Las Cruces, New Mexico. Alice Gathercole is historian at present, and she wishes to receive clippings and articles of any kind pertaining to activities of the mineral societies in the federation, and affairs for the past year.

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PERRY 8" TRIM SAW. Now \$24.75 at all dealers. L. E. Perry, 118 N. Chester, Pasadena 4, Calif.

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ROCK COLLECTORS—Attention! I am covering California, Oregon and Washington this summer with the finest variety of rock and mineral specimens in the West, for sale, in the Trailer Rock Store. Send your address—I will notify when in your district. The Rockologist (Chuckawalla Slim), 1152 So. 2nd Ave., Arcadia, Calif.

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MONTANA MOSS AGATES in the rough for gem cutting \$1.00 per lb. plus postage. Also Slabbed Agate 25c per sq. in. (Minimum order \$1.00). Elliott Gem Shop, 26 Jergins Arcade, Long Beach 2, California.

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JADE SLABS: white or green, also rhodonite slabs, four square inches or more in each slab, 50c. Jade by the pound \$5.00. Chas. O. Larson, 613 French St., Yreka, Calif.

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AMONG THE ROCK HUNTERS

Members of the Cheyenne Geology club joined with Colorado Mineral society in a trip to the vicinity of Chimney rock, northern Colorado, early in May. The trip was reported as windy, but aragonite crystals were collected for use in gift packages at the national mineral convention in Denver, and for private collections.

Mineralogical Society of Utah and the Gem Stone Collectors of Utah made a field trip to Clear lake for cutting quality labradorite. Each society filed a claim covering areas in the collecting field in order to preserve collecting for their members and for others who obtain permission from club officers. It was the third attempt to reach the field, the others being abandoned because of bad weather.

Many beautiful minerals that occur in Utah were discussed in a talk, "Mother Nature's Jewel Box," given by Dr. Olivia McHugh at the April 16 meeting of Gem Stone Collectors of Utah, Salt Lake City. Dr. McHugh is an organizer and charter member of the Mineralogical Society of Utah and supervisor and sponsor of the junior mineral club of Salt Lake City.

A big "swapping party" was held by six northern California mineral societies at the American Legion park in Modesto, June 20. Societies scheduled to participate were: Sequoia, San Jose, Monterey, San Francisco, East Bay and Mother Lode.

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The 17th annual meeting and picnic of the Mineralogical Society of Southern California was planned for June 6 in Oak Grove park near Devil's Gate dam, Pasadena. Officers and directors decided this year to eliminate competition among the exhibitions at the meeting and instead to give an exhibitor's ribbon to everyone having a display. Chairmen for the meeting were: publicity and invitation, Don George; reception, Pauline Saylor; decorations, Mrs. Estelle Ellery; exhibits, Louis Vance; grab bag, Jack Rodekohr; auction, Willard Perkin. Officers for 1948-49 were to be elected at the meeting.

San Jose Lapidary society elected the following officers at its June meeting: president, Charles Murphy; vice-president, Mrs. Norman Pendleton; secretary, Burton Stuart; and treasurer, David Burridge. New committee chairmen are: field trips, Al Cook; programs, Norman Pendleton; sales and display, Morton Bachrach; hospitality, Sue Bachrach; membership, Gertrude Pendleton; librarian, R. D. Williams; historian, Russell Grube; reservations, Frank Gardner. Frank J. Esterlin, lapidary of Walnut Creek, told about his apprenticeship and early career cutting and polishing stones. A round table discussion on sphere cutting was scheduled for the July meeting. The society's address is P. O. Box 942, San Jose, California.

Minnesota Mineral club of Minneapolis has planned a series of field trips for the summer. First trip of the season, May 16, was to Marine on the St. Croix where 90 collectors hunted in gravel pits and washes for agate and petrified wood. June trip was scheduled to Crosby, Minnesota, and the July trip will be to Moose lake where there are several large gravel pits.

A demonstration of faceting was staged by Lowell Gordon at the May meeting of Long Beach Mineralogical society. A stone was completely faceted, with Gordon explaining each step as the work progressed. June meeting of the society was to be the quarterly potluck dinner.

Richard M. Pearl, department of geology, Colorado college, was elected president of the Colorado Mineral society at the May meeting. Ray W. Thaler is first vice-president; Chester R. Howard, second vice-president; Mrs. Jane Hayward, secretary-treasurer; Mrs. Mignon W. Pearl, 1130 Wood, Colorado Springs, Colorado, corresponding secretary. The society recently welcomed the 500th person to membership. At the May meeting colored slides of Texas agates taken by R. C. McIver of Dallas were shown.



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According to the bulletin of the East Bay Mineral society: "The number of rocks a rockhound has does not always mean more happiness. A rockhound with 10,000,000 rocks is no happier than one with 9,000,000."

Fifty members of the Mother Lode Mineral society, Modesto, met at Valley Springs, May 2, and visited a new opal find where they dug to their hearts content. May 23, Bill Weston long-time member of the club, held open house for the Lodi and Modesto societies. At the regular May meeting Roy Brown and F. R. Chatfield showed colored pictures of various trips, including club field trips.

Northern California Mineral society will suspend club activities during July and August, except for lapidary work which will continue at headquarters. K. C. Peer, technical director of Multiphase Laboratories, Inc., was to address the regular meeting June 16. Topic: "Spectrographic Analysis of Minerals." O. E. Bowen, geologist with the state division of mines and Dr. Austin Rogers spoke at the May meeting. May field trip to Fairfield was reported successful, with members obtaining blue, banded and white onyx. June trip was to Lombardi's ranch for crystals.

Climaxing a successful year, 120 members and guests of the East Bay Mineral society held a barbecue dinner at the Park Boulevard club house, June 6. Officers elected May 20 were installed. Millard V. Moore is the new president; Ernest M. Stone, vice-president; J. J. Mallon, secretary; Gerould H. Smith, treasurer; Gordon White, corresponding secretary; Dr. David F. Houston, director. After the dinner, an exhibit of minerals, cut and polished stones, and hand made jewelry was shown in the display room.

Dr. Richard H. Jahns of the California Institute of Technology, was to speak on "Pegmatites in the Northern Part of San Diego County," at the June meeting of San Diego Mineral and Gem society. Dr. Jahns has been actively engaged in making a survey of pegmatites in the county. At the May meeting, Prof. Baylor Brooks spoke on origins of primary and secondary minerals. Tom Hall, student in San Diego state college, department of geology, showed slides of thin sections of minerals photographed under the microscope. The board of directors has voted to accept persons interested in ceramics into the society, and it is planned to form a ceramics division when ten or more sign up as being interested.

Officers elected at the June meeting of the Texas Mineral society of Dallas were: president, William H. LaDew; vice-president, Otis Dozier; secretary-treasurer, Ralph D. Churchill; board of directors, Dr. Vernon M. Bryant and Asa Anderson. Mrs. Robert Peck and Fred Bentley have unexpired terms as directors.

Frank Latta was to lecture on "Hunting Methods and Ceremonials of the Yowlumee Indians" at the June 14 meeting of Kern County Mineral society of Bakersfield. Twenty-nine members and 10 guests attended the May meeting. Field trip for the month was to the Parkfield jasper locality.

The Clark County, Nevada, Gem collectors met at Mrs. Anna Park's new museum, Las Vegas, June 5. About 30 members were present and a potluck supper was served. The new club meets every Saturday night and plans a field trip for the next day.

Dr. David Monach spoke at the May meeting of Chicago Rocks and Minerals society. Dr. Monach, retired physician and surgeon, started his hobby of silverwork after he was 65 years old.

COLUMBINE SOCIETY IS NEW SALIDA, COLORADO, GROUP

Membership in the new Columbine Gem and Mineral society of Salida, Colorado, reached 23 in May. Peggy L. Perry of Poncha Springs is president, and Mavis Clark, Salida, secretary-treasurer. The club meets first and third Tuesdays at the junior high school in Salida.

Marquette Geologists association was host to the Wisconsin Geological society of Milwaukee, Joliet Mineralorist society and Chicago Rocks and Minerals society at their May meeting. Most of the evening was taken up in examination of the exhibits on display. Election of officers and showing of two color films, one on Grand Canyon and one on the Navajo, were planned for the June meeting, last before the summer recess.

San Fernando Valley Mineral and Gem society of North Hollywood held a picnic and annual auction June 10. Profits from the auction are used to defray expenses of the fall gem show. There were two large tables of jewelry and gem material donated by members. June field trip was planned to Gem hill.

According to the Los Angeles Lapidary Society, Inc., 200,000 persons in Los Angeles county are interested in cutting and polishing gem stones as a hobby, and estimates of gem and equipment dealers indicate that 30,000 actually own some kind of gem cutting equipment. The society has built 100 glass show cases for display of the members' work in gems and jewelry during the past two years. The society is holding its sixth gem show in conjunction with the state convention of the California Federation of Mineralogical societies in Long Beach municipal auditorium, July 16-18.

Wendell Stewart was guest speaker at June meeting of Pomona Valley Mineral club, held in the chemistry building of Pomona college. His topic was "Mines and Minerals in Mexico," and he projected Kodachromes which he and Earl Calvert took on trips into the Mexican interior. He exhibited many specimens of Mexican gems and minerals, including opals cut and polished by the Mexicans with crude equipment. The club will hold its annual picnic in July and plans a trip to California Institute of Technology museum for August.

Modesto Leonardi was to speak at the June meeting of Searles Lake Gem and Mineral society at the Trona club. July meeting was to be a potluck dinner and swapping party at Valley Wells, July 24.

Seattle Gem Collectors club has invited the Tacoma Agate club to join them in a picnic in Saltwater park, July 18. Paul H. Soll will be in charge. Bernard Knudson spoke at the May meeting, telling of his experiences during eight years while he lived in and near Nome, Alaska.

June meeting of Dona Ana County Rockhound club of New Mexico was held at the home of R. V. Bandles, Mesilla Park. Study of the quartz family was continued, and Mr. and Mrs. Fred Lemon of Las Cruces demonstrated fluorescence of minerals from their collection. May meeting was at the home of Ruth Randall, Mesilla Park. During the month the club had two official and several unofficial field trips and obtained much material. June field trip was planned to Tiergarten cave in the San Andreas mountains.

Walter Fiss, Barstow photographer, presented a pictorial trip to Pisgah crater at the June meeting of the Mojave Desert Gem and Mineral society of Barstow. The pictures showed numerous lava blisters, some of them broken, and one natural bridge formation.

Hollywood Lapidary society planned annual election of officers at the June meeting. Present officers are James C. Arnold, president; Frank Graf, first vice-president; Mrs. Ken Baxter, second vice-president; Evinita New, recording secretary; Della Holbrook, corresponding secretary; A. H. Behner, treasurer; Stuart Peck, constitution and by-laws; Arthur Hawkins, historian. Virginia Lee Haithcock is editor of the society's newsy mimeographed bulletin. The June election will mark the society's second anniversary, with their membership of 75 complete. At the May meeting Jack Gaston, president of Los Angeles Lapidary society, gave an illustrated lecture on all phases of gem cutting.

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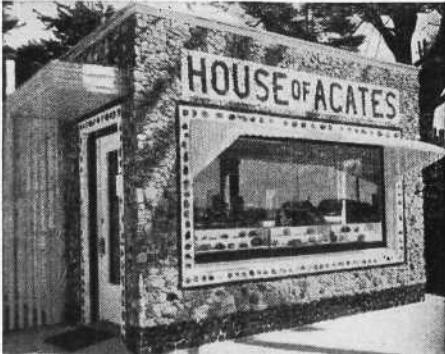
Ocie Randall, writing in the Sequoia Mineral Society Bulletin, advises buyers of uncut turquoise to try to detect a strong odor of matrix or to let the rock dry a short time in the hot sun. Some of the material, he says, is soaked in water to brighten the color temporarily before it is sold.

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PRESCOTT JUNIORS WIN AT NATIONAL CONVENTION

Seven Prescott rockhounds—four from Yavapai Gem and Mineral society and three from the Junior Rockhounds—who visited the first national convention of the American Federation of Mineralogical societies in Denver, June 13-16, reported an interesting and eventful experience. The Prescott Junior Rockhounds won the prize for the junior mineral exhibit. Delegates to the convention were Mr. and Mrs. E. E. Michael, Yavapai Gem and Mineral society, and Chip Murdock and John Butcher of the Junior Rockhounds. Alternates were Charles Murdock and Harold Butcher of the Yavapai society and Pete Murdock of the juniors. Special awards for exhibits were won by Mr. and Mrs. Michael, Chip Murdock, John Butcher, Nancy Merwin, John Yount, Ann Crittenden, Bobby Williams, Eddie Brooks and Geoffrey Butcher.

• • •

Sequoia Mineral society scheduled the first outdoor meeting of the year for June 5, 1948, in Roeding park, Fresno, with a picnic dinner planned.

• • •

The Southwest Mineralogists, Inc., have elected the following officers for 1948-49: Walt Shirey, president; Frank Trombatore, vice-president; Mrs. James Creighton, recording secretary; Connie Trombatore, 338 Pomelo St., Monterey Park, California, corresponding secretary; Pearle Arnold, treasurer. The club's board of directors consist of the officers and James Creighton, Henry Green and George Schwarz.

• • •

Sound films on "Oil for Aladdin's Lamp" and "Chemistry of Aluminum and Its Processing" were shown to the Pacific Mineral society at the June dinner meeting. The society's field trip for May was to Goodsprings quadrangle, Nevada, where feldspar crystals, hydrozincite, smithsonite, lead and other minerals were collected.

• • •

J. W. Anderson of Baltimore offers a good suggestion for the person who likes to make his own tools. He claims that good wooden mallets may be made by using ordinary gas pipe T connections. Grind, file and polish these and then use a pipe wrench to screw 3" long pieces of hard wood into the connections and another piece 10" long for the handle. Then shape, sand paper and varnish. The T connection will give weight to the mallet and prevent the wood from splitting.

• • •

Copper was used by man as early as 4000 B.C.

• • •

Fluorite, or fluorspar, is made up of calcium and fluorine. It was named from the Latin word "to flow," since it melted easily. The property of minerals to glow under ultraviolet light was called "fluorescence" because of its observance in fluorite. Fluorite is used in making glass and enamels and as a flux in the iron and steel industries. Hydrofluoric acid is used in the preparation of high octane gasoline, refrigerants, plastics and insecticides.

• • •

If you long to cover your old homemade saw with a nice plastic hood, like you see on some of the new saws, but you cannot get the material we offer the following idea. No matter where you are located you should be near an x-ray. Go to your nearest hospital or to your doctor, if he has an x-ray, and ask them to save you their under-exposed films. The best technicians will spoil films occasionally and they are thrown away. After you collect a few large negatives, that are grey instead of deep black, only a lack of ingenuity will prevent your cutting out and putting together some of the trickiest hoods and splash pans ever invented—and you can see right through them.

The story of granite is told by J. Drexel Miller in September *Rock Rustlers' News*, bulletin of the Minnesota Mineral club. Granite is a product of heat in ancient times, formed from a lava rich in silica, alumina, potash and soda, but poor in iron, lime and magnesia. It flowed quietly over the land, welling up from subterranean cavities. The name, granite, designates the granular crystalline rock composed of crystals of quartz, orthoclase feldspar and mica.

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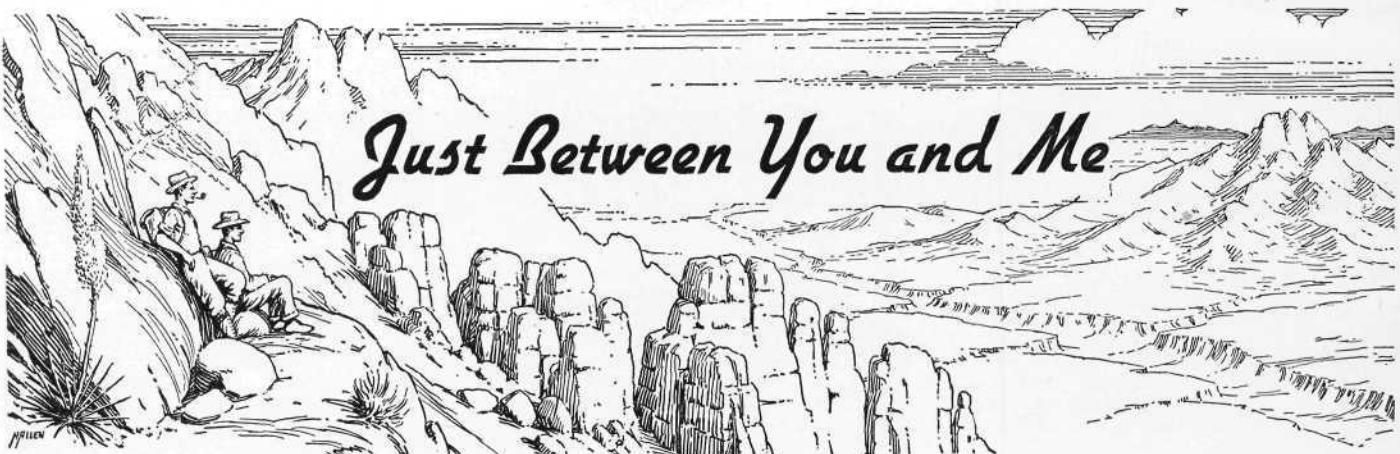
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Just Between You and Me

By RANDALL HENDERSON

THE TEMPERATURE outside has been hovering around 110 degrees. That means it is just an average summer day on the floor of the desert. But indoors it is very comfortable, for most of the folks who live in the desert country now have air coolers in both homes and workshops.

Motorists from cooler climates speed along the highways and wonder why anyone would come to the desert for a permanent home. Actually, the summer heat holds no terrors for healthy persons with active minds. Children thrive in this climate. Occasionally there are adults who cannot take it for physical reasons.

But for those who enjoy reading, or who have work or hobbies which keep their minds active the days pass quickly and pleasantly, and when one perspires freely the body is cleansed of some of the poisons that come from over-eating.

It would be good for all normal humans to spend a summer on the desert periodically.

* * *

Archeology is a glamorous occupation—only for those who have never worked at it. And if you want confirmation of this assertion, let me quote from a little mimeographed bulletin issued monthly by the San Diego Museum of Man:

"This is the time of year when we get many calls and requests from people who want to be archeologists and go exploring for the summer. And when we show them one of the archeologists's most important tools—a shovel—some of them exclaim 'Not that!' When they really are serious, we tell them about the digging and the bugs and dirt and heat. Most archeologists in the field look forward to a day of hot baths, fresh vegetables and fruit, and some of the basic comforts of life. And after they have been home a few months they leave again for more bugs and dirt and heat."

* * *

Down through the ages the desert has been a place of retreat for those who were preparing for the ministry, or who sought that poise which can come only when we are at peace with ourselves. But Suzanne Dean of Fullerton, California, has reminded me that it is not necessary to go to the desert to find solitude. She sent me this quotation from Emerson's *Solitude*:

"It is easy in solitude to live after our own, but the great man is he who in the midst of the crowd, keeps with perfect sweeteness the independence of solitude."

* * *

My desk this June 30th morning is a little retreat in a confusion of boxes and crates and cabinets. The reason: Desert's staff is preparing to spend the Fourth of July weekend moving to our new publishing plant at Palm Desert in California's Coachella valley.

This August issue is being made up in El Centro, but will be mailed from the less-than-a-year-old postoffice at Palm Desert. For many years we have been trucking the page forms to Los Angeles for press-work and binding. As soon as the big presses are installed in the new plant, the entire printing operation will be done in our own shop.

There is much work yet to be done at the new site. The grounds around the building are still littered with construction debris. But that will all be cleared away and the site landscaped with the native plants and rocks of the desert. We are planning to carry photographs and a more complete story of this desert publishing venture in our anniversary issue in November.

Around the new building will be generous parking areas reserved for Desert's growing family of readers. Don't come too soon for it will require several weeks to put our new house in order—but by early fall we will have the welcome sign out for all of you.

El Centro has been kind to us. This is a progressive and friendly community—the nerve center of one of the most productive farming areas in the land. We are grateful to El Centro people for their loyalty to our publishing project.

But it was necessary that we have more space—and we wanted to build our new home out on the sands among the grease-wood and palo verdes. Hence the move to the lovely desert cove at the base of the Santa Rosa mountains overlooking Coachella valley. That spot has a sentimental interest for me. The Santa Rosas have always been a favored area for camping and exploring, and it was during a climbing trip on the 8000-foot ridge overlooking the Palm Desert cove that Wilson McKenney and I more than 12 years ago reached the final decision to launch Desert Magazine.

You'll see some new type faces in later issues of Desert, and perhaps more advertising, for it will require increased income to maintain so spacious a plant. But we have no thought of changing in any important detail the editorial policies of the magazine. For nearly 11 years we have kept always before us the goal expressed in our first issue in these words:

"The desert has its own traditions—art—literature—industry and commerce. It will be the purpose of Desert Magazine to crystallize and preserve these phases of desert life as a culture distinctive of arid but virile America. We would give character and personality to the pursuits of Desert peoples—create a keener consciousness of the heritage which is theirs—bring them a little closer together in a bond of pride in their desert homes, and perhaps in some measure break down the prejudice against the desert which is born of misunderstanding and fear."



KINO WROTE THE STORY OF PIMERIA ALTA

Jesuit Father Eusebio Francisco Kino was missionary, church builder, explorer, map-maker and ranchman. During the years 1687-1711, when he founded and resided at Mission Dolores in present-day Sonora, he made more than 50 journeys along unknown trails in Sonora, Arizona and Lower California. Despite his almost constant labors, Kino found time to write a personal account of his wanderings. His record was used by early Jesuit historians, then became lost for a century and a half while its very existence was questioned.

About 40 years ago, Dr. Herbert E. Bolton discovered the manuscript in the archives at Mexico City, written in Kino's own hand. Bolton translated and edited his find and it was published in 1919 as *KINO'S HISTORICAL MEMOIR OF PIMERIA ALTA*. That edition has long been out of print, and a collectors' item. Bolton's later biography of the great Jesuit missionary, *Rim of Christendom* also is out of print and selling for double the published price. The only work easily obtainable has been Frank Lockwood's excellent but brief *With Kino on the Trail*.

Now *KINO'S HISTORICAL MEMOIR OF PIMERIA ALTA* has been republished by offset from one of the original editions. It again is possible for the general reader to follow Kino's day-by-day story of the spiritual affairs, explorations, Indian troubles, native customs and mission life in Pimeria Alta (Sonora and Arizona) from 1687 to 1710, in the form of diaries, letters and historical summaries.

Kino's own story, told in the letters and an introduction, is almost unbelievable. Some of his expeditions on foot or horseback were over 1000 miles long. He made the first accurate map of Pimeria Alta, published in 1701 and the standard for a long period. He proved California was a peninsula rather than an island. He traveled up and down the arid *Camino del Diablo*, whose waterless length was to cost the lives of many later adventurers. He founded a chain of missions, including San Xavier del Bac. A man of tremendous vitality, Kino averaged 30 miles a day in the saddle over long distances when he was 60 years old.

Kino's historical memoir is one of the basic works of Southwestern history and essential reading for anyone interested in the Jesuit missionary and his times.

University of California Press, Berkeley, California. Maps, plans, index, bibliography, introduction outlining the life and writings of Kino. Two volumes in one, 708 pps. \$10.00.

• • •

THEY MADE REMEDIES FROM THE DESERT PLANTS

How intimately desert plants are related to the life and lore of the New Mexicans is told by L. S. M. Curtin in the beautifully printed book, *HEALING HERBS OF THE UPPER RIO GRANDE*. A traveler through the desert may think it a barren wilderness. But for those who belong to the earth it is grocer and druggist. It yields food and fuel, provides household necessities and craft materials—and most of all is a source of remedies for all ailments from colic to bewitchment.

Having no access to doctors or supply stores, natives developed their own cures and took their necessities from what grew around them—the roots, leaves, stems, bark, blossoms, gum—even the earth itself. Many of the plants yield products for multiple uses. Juniper, mistletoe berries,

the gourd, red chile, creosote, lemonade berry, prickly pear, corn, yuccas, pinyon pine, mesquites—all contributed full measure to native life. Rabbitbrush produces a gorgeous yellow dye. Chia sage seeds are so nutritious one tablespoonful will sustain an Indian 24 hours on a forced march. From the cottonwood bole the Pueblo Indians fashion drums and from its roots the Hopi carve Katchina dolls. Even the decorative scarlet bugler is a valued item of the native *médica*.

Inspired by the interest of the late Mary Austin who deplored the rapid disappearance of folklore, L. S. M. Curtin started the long, intensive research which was concluded with publication of *HEALING HERBS OF THE UPPER RIO GRANDE*. In it, the plants and other remedies are listed under their Spanish or native names, then popular and scientific classifications. But it is far more than a compendium of native plants and their uses. The work combines botany, plant geography and history, customs, myths and superstitions, daily rites of cookery and handicraft, and other facets of life among Southwest Indians and Spanish speaking peoples of New Mexico. The book was designed by Merle Armitage and illustrated with drawings by P. G. Napolitano. While carrying the imprint of the Laboratory of Anthropology, it is the first publication of the San Vicente foundation.

San Vicente Foundation, Inc., Santa Fe, New Mexico, 1947. 281 pps. 30 photographic illustrations, remedy and general indexes, bibliography, endmaps. \$7.50.

The Indians Are Dancing . . .

DANCING GODS

By ERNA FERGUSSON

The first popular account of the Indian ceremonials of New Mexico and Arizona, will add to your understanding of the Snake dance, the Corn dance, the Devil dance. Erna Fergusson, born in the Southwest, describes and interprets the dances of the Rio Grande and Zuñi pueblos, the Hopi, Navajo and Apache Indians. With 16 halftone illustrations from the paintings of famous Southwestern artists.

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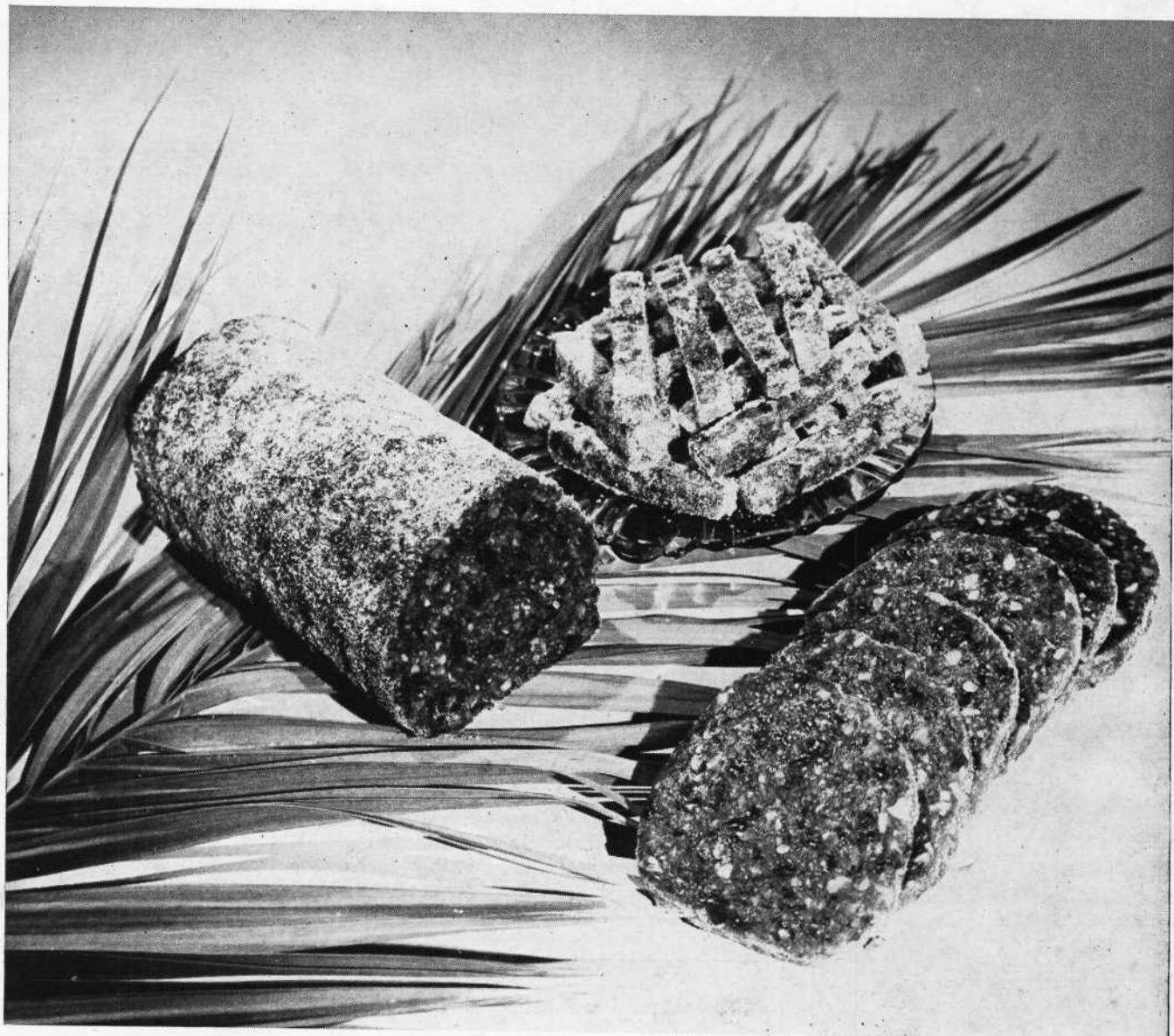
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3 pounds	· · · · ·	2.75
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